

Journal

OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

AVMA Convention—Cleveland, August 19-22, 1957

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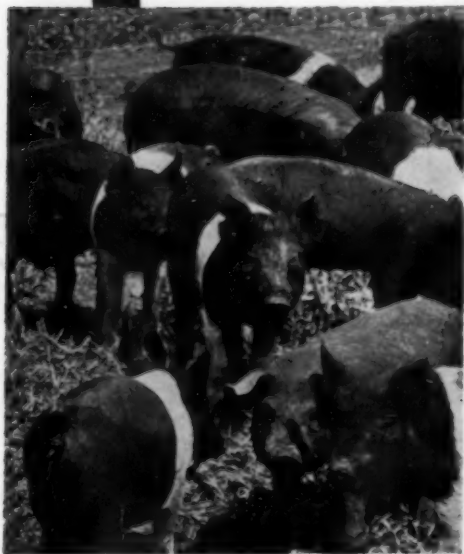
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Correspondence

Dear Sir:

With reference to the note, "A Bulla-like Endocardial Lesion in a Cow" (J.A.V.M.A., 129, (1956): 515), the authors appear to have neglected to consult veterinary pathologists or the standard German pathology text (Nieberle and Cohrs: "Lehrbuch der Speziellen Pathologischen Anatomie der Haustiere," G. Fischer Verlag, Jena, 1954: 2-3) in their evaluation of this lesion.

In free translation, Nieberle states that blood cysts of the heart valves are frequently encountered in all animals, particularly calves where 75 per cent may be affected. The cysts are found more commonly on the auricular side of the atrioventricular valves and, less commonly, on the ventricular side of the semilunar valves. The cysts are covered inside and outside by endothelium and usually are filled with blood, although sometimes with serous fluid. These cysts develop from preformed endothelial-lined spaces present in the developing heart valves which communicate with the ventricle in the case of the atrioventricular spaces and the sinus of Valsalva in the case of the semilunar spaces.

In the present writer's own experience and in that of others in America and Sweden, the occurrence of cysts in the heart valves of animals, particularly in cattle, is common and hardly worthy of specific comment.

s/James R. Rooney II, D.V.M.
Department of Pathology,
Royal Veterinary College,
Stockholm, Sweden

Feb. 4, 1957



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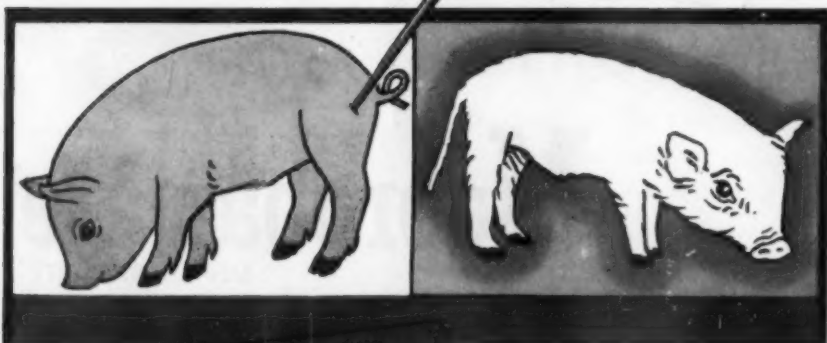
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Fincher, M. G.; Hayden, C. E., and Hall, A. G.:
Cornell Vet. 30:197 (April) 1940.

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Link, R. P.; Newton, D. I., and Huber, W. G.:
Paper presented at 93rd Ann. Meeting, A.V.M.A.,
Oct. 15-18, 1956, San Antonio, Texas.

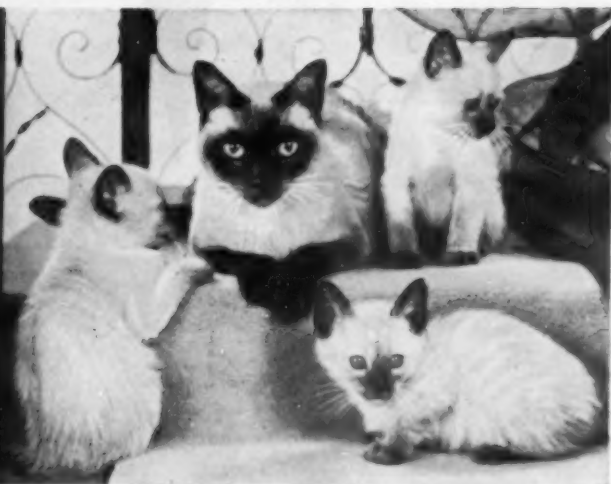
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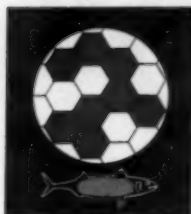
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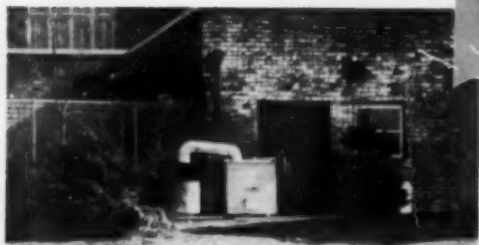
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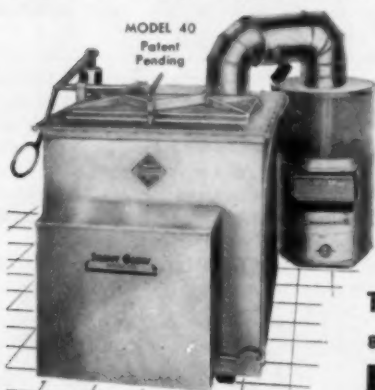
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Tips on Working with Other Groups

Livestock Producer Groups

KENNETH G. McKAY, D.V.M.,
Extension Veterinarian
Davis, Calif.

Presented at the AVMA Public Relations
Conference, San Antonio, Oct. 14, 1956

Mr. Chairman, ladies and gentlemen, I wish to thank you and the Program Committee for the opportunity of serving on a panel of the 1956 AVMA Conference on Public Relations.

I am particularly appreciative of the opportunity to serve on the panel entitled "Tips on Working with Other Groups" and, finally, to have been assigned "Livestock Producer Groups."

It is my purpose to develop thinking on several major phases of the topic assignment, namely:

The estimated losses caused by diseases, parasites, and insect pests as reported in the 1942 Yearbook of Agriculture, published by the U. S. Department of Agriculture, entitled "Keeping Livestock Healthy."

The estimated losses caused by diseases, parasites and insect pests by 1956 as reported by the U.S.D.A.

The total sales of animal and poultry products as reported by the *American Druggist*, (April 23, 1956).

The county agent (farm advisor) and the practicing veterinarian and their responsibility to the livestock industry.

The place of the practitioner in the program of the Agricultural Extension Service.

It would be well to briefly consider the livestock population in 1883, before the establishment of an organized national animal disease eradication program.

It is reported we had an estimated livestock value in the United States of over \$2.5 billion and a total of approximately 146,000,338,000 + animals.

By 1942, the U.S.D.A. reported that our annual losses caused by disease, parasites, and insect pests were well over \$400 million.

By 1954, we lost in the year 4,000,000 cattle and calves out of a reported total of 95,000,000 head of cattle on U. S. farms and ranches. We also lost 4,000,000 sheep and lambs; 10,500,000 swine; 235,000,000 chickens; 7,200,000 turkeys, and 250,000 horses and mules.

This represents an aggregate loss of \$2.7 billion in 1954 as compared to a total estimated value of all livestock in continental

U. S. in 1883 of less than \$2.5 billion. This change took place in exactly 71 years.

At the same time, it is to be remembered that the first classic example of returns in animal disease research was in tick fever, which research cost \$65,000 and returned to the livestock producer a saving of \$60 million annually.

The economic losses sustained by the livestock industry from animal diseases, parasites, and insect pests are prodigious and appalling.

Countries where animal parasites run rampant and epizootics flare up repeatedly are half-starved. In fact, history documents the destruction of civilizations because of diseases transmitted from animals to man. We are presently confronted with some 80 of these.

The American family of four uses almost 3 tons of food a year, of which approximately one half is meat, eggs, poultry, and dairy products. Americans consumed 25 per cent more animal foods in 1956 than in 1935.

However, the U. S. Department of Agriculture in 1953 reported that the average value of cattle was down 28 per cent per head and of stock sheep 12 per cent per head from the previous year.

This decline in values indicates that some farmers were more than usually susceptible to price-sales talk of the type practiced by drug vendors.

The annual (1953) *American Digest* survey of the market for animal and poultry health goods is: "Of all distributors of such merchandise, house-to-house salesmen last year showed the largest gain compared with the year before. Now it would seem they are turning their attention to a field in which the pharmacist has become a factor only after years and years of effort."

The *American Digest* (April 23, 1956:71) reports the following:

Animals Goods Sales			Change (%)
	1954	1955	
Drug stores	\$ 39,305,000	\$ 39,638,000	+0.8
All others	99,817,000	102,551,000	+2.8
Total sales	\$139,122,000	\$142,189,000	+2.2

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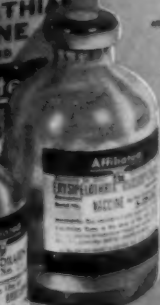
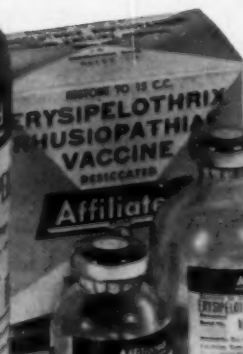
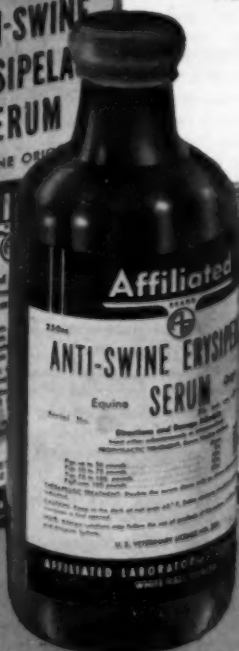
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Sales by Outlets in 1955

		% of Total	Change (%)
Drug stores	\$39,638,000	27.9	+0.8
Veterinarians	39,651,000	27.9	+1.1
Feed stores	23,996,000	16.9	+7.1
Hatcheries	14,898,000	10.5	+5.3
Farm co-ops	9,232,000	6.5	+2.6
Mail order	3,929,000	2.9	-2.5
House-to-house	1,952,000	1.4	-1.9
All other	8,893,000	6.2	-1.7

I am of the opinion that, in the area of dispensing animal and poultry products, the livestock industry will be better served by veterinarians because of their superior knowledge acquired in formal training and clinical experience than by druggists, the feed store employee, the hatcheryman, the farm cooperative, the mail order house, or the vendor.

As to the responsibility of the county agent (farm advisor) and the practicing veterinarian to the livestock industry, I quote from an article written in 1948 by Dean William A. Hagan of New York State Veterinary College, Cornell University:

I have been concerned for a long time over certain antipathies which seem to exist in many parts of the country between practicing veterinarians and county agents. I see no fundamental reasons for these differences. Certainly they do not help either of the parties concerned, and they often work injury to the agriculturist whom both are serving. I think an effort should be made to iron out these differences.

Following is a memorandum regarding veterinary extension work, written in 1931 by C. M. Warburton, director of extension services, to me in regard to my letter of April 14, 1931, to him:

April 14, 1931

Mr. [Dr.] Kenneth G. McKay,
College of Agriculture,
Berkeley, California

Dear Sir:

Memorandum re: Veterinary Extension Work

From time to time in the development of co-operative extension work, we have had occasion to consider our relations with the veterinarians.

Extension agents, particularly county agents, have on occasion taught the farmer how to vaccinate hogs against cholera, cattle against blackleg, anthrax, etc. Sometimes the county agents have gone so far as to treat the whole drove of swine or cattle on a man's farm, thus going beyond our function as educators and entering the field of service, often in competition with trained veterinarians who have prepared themselves at considerable expense and time for this work.

This letter is to raise with you the question as to whether, as a national extension policy, we ought not, in the best interest of agriculture and livestock production, systematically to encourage farmers to call more largely on veterinarians when available in the treatment of their livestock, and thus make it possible for farmers to have at their service at all times expert guidance in the veterinary field.

County agents are not trained veterinarians. When they enter the diagnostic and treatment field of animal diseases, the farmers are not getting the best service. Yet such service by publicly paid employees may cut into the practice of the professional veterinarian and make it impossible for him to live, except in a few of the larger cities or more densely populated counties. The veterinary profession, I understand, is declining, with decreasing numbers of students preparing in this field, to which condition the veterinary work done by some extension workers may be a contributing factor.

We would propose for your consideration, as a national extension policy, that whenever the services of veterinarians are available, cooperative extension agents limit their activities in the animal disease field primarily to sanitation and preventive measures, and that they refer the farmer to the veterinarian in all cases involving the treatment of animals, sale of viruses, vaccines, and surgical instruments, the castration of livestock, and similar matters in the veterinary field.

Further, that we encourage the closest kind of coordination and cooperation between county agents and veterinarians in watching over the health of the farmer's livestock. This should be done in such a manner as to encourage the faith of the farmer in the value of this service and the service should be so conducted as to be within the means of the farmer.

It is our thought that even in districts where the services of veterinarians are unattainable except at great cost of time and money, county agents should not go beyond the demonstration in teaching farmers that some animal diseases may be warded off through the use of certain immunization procedures, except where immediate action may seem necessary to check incipient outbreaks of cholera, etc., to protect the livestock industry of the section from serious loss. Efforts should be made by extension agents to encourage veterinarians to take up practice in such regions. Elsewhere, the demonstration should be put on by the veterinarians, upon solicitation of county agents and farmers, and county agents should not engage in service work in this field.

We believe, if we can in general accept the views presented above, we will promote and encourage the veterinary profession, upon which we must depend in times of emergency in the animal disease field, and thus directly promote the welfare of agriculture.

If the foregoing is in accord with your views, I would be glad to have you bring it to the attention

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AVMA REPORT—Continued

of all extension agents and, so far as practicable, of farmers and farmers' organizations.

Yours very truly,
s/C. W. Warburton, Director,
Extension Work, U.S.D.A.,
Washington, D.C.

With that end in view for approximately 28 years, I have endeavored to keep those farm advisors responsible to the University for livestock and dairy projects out of the field of disease diagnosis and treatment.

I have supplemented this action by stimulating livestock disease symposiums on a county level basis, cosponsored by the county farm advisor and local practitioners. These meetings have been unique in that the participants have favorably commented on their success.

The meetings served to bring farm advisors and veterinarians to a better appreciation of the place of each in a livestock program. They widened the liaison opportunity of the extension veterinarian between the regulatory groups, the county farm advisors, and the practitioners; and, finally, the livestock industry gained a better appreciation of the local available veterinary talent.

Today, we have in the United States only 17 full-time extension veterinarians working in the field of animal and poultry health.

We have 13 additional extension veterinarians who spend approximately 36.5 per cent of their time in animal health, poultry health, teaching, research, or clinical work.

We are without a federal extension veterinarian in the Washington, D. C., office of the Agricultural Extension Service. Such directives as we get from Washington come from a livestock specialist. This situation might well be improved, especially in view of the fact that the previous federal extension veterinarian, through no fault of his own, functioned as an animal husbandman. Again, I think the livestock industry would best be served in veterinary activity, whether institutional or in the field of private practice, by veterinarians.

In summary, I believe we veterinarians can best serve livestock producer groups:

- + By debunking sales promotional schemes.
- + By serving the livestock industry in dispensing biological products in animal and poultry health enterprises.
- + By cooperating with federal, state, county, and city regulatory and educational bodies by serving on educational panels, committees,

discussion groups, and those sponsored by livestock producer groups.

- + By rendering a veterinary service to livestock-producing groups that will be economically satisfactory to the producer and reflect credit on the profession.

Other Professions

O. NORLING-CHRISTENSEN, D.V.M., Practitioner,
Wilmette, Illinois

This subject of interprofessional relations, as probably some of you know, is very dear to my heart. I have spent a lot of time in the State of Illinois on this program. We have come a long way. It is gratifying to see that Ohio comes through to greet this topic with a most wonderful display as you enter this room. I want to thank Dr. Madden and his associates from Cincinnati for bringing this display that pictures what we are trying to do, interprofessionally.

I think the Illinois Interprofessional Council is the oldest Council of its kind in the United States. By working together, as we are every month, with the healing arts professions, we have gained a tremendous advantage for the veterinary profession.

One other council member is with us today, Dr. C. B. Hostetler, executive secretary of the Illinois State Veterinary Medical Association. The reception given us by all the other professions certainly dispels the idea that we are not welcome.

Our AVMA president, Dr. Floyd Cross, says he is an optimist, but I am a "super optimist." I see everything in a rosy light for the future of our wonderful profession.

There are six member professions in the Illinois Interprofessional Council and every profession has equal vote. With your permission, I shall give you the introduction to our Constitution and Bylaws because it may be interesting for you to know the names of the six professions in this council:

The poet's dictum that "no man is an island" is applied literally to the healing arts professions in the Illinois Interprofessional Council. The Council is planned to bring together in cooperation at the state level the six major professional groups. Its principal objective is to stimulate joint activity among their component groups and individual members at the local level.

The work of the Council, approved and supported by all the state organizations, thus merits the earnest consideration and cooperation of every practitioner in Illinois.

The member organizations are: the Illinois



PROTECTION AGAINST THESE COMMON POULTRY DISEASES

• *coccidiosis* • *synovitis* • *hexamitiasis*
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New dosage form of FURACIN—an effective coccidiostat against *E. tenella* and *necatrix*. In cartons of 330 Gm. with plastic scoop, to medicate 50 gallons of drinking water. AVAILABLE THROUGH YOUR PROFESSIONAL VETERINARY DISTRIBUTOR



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proven results in these diseases of small animals

CANINE TRACHEOBRONCHITIS (KENNEL COUGH). In one study of 12 cases, FURADANTIN stopped the cough completely within 3 to 7 days.¹

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Preliminary data point to new indications for FURADANTIN. Various reports describe encouraging results with FURADANTIN in the treatment of vaginitis in the bitch and genitourinary tract infections of mares.³ Another ar-

ticle concludes that FURADANTIN is an excellent adjunct to surgery in the treatment of prostatic abscess in the dog.³

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Available as orange scored tablets of 10, 50 and 100 mg.; and Oral Suspension, bottle of 60 cc.

REFERENCES: 1. Mosier, J. E.: *Vel. M.* 50:605 (Nov.) 1955.

2. Beller, G. S.: *Calif. Vet.* 9:27 (Sept.-Oct.) 1956.

3. Pollock, S.: *J. Am. Vet. M. Ass.* 129:274 (Sept.) 1956.

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In retained placenta, treatment with FUREA has produced quick improvement of the general condition of the cow with lessening or elimination of malodor. Fertility rate remained unimpaired in over 90% of treated cows.*

SUPPLIED: Each bolus contains 0.12 grams of FURACIN and 12 grams urea. Bottle of 25.

DOSE: Two boluses inserted into the recently pregnant horn. One bolus may be placed in the non-pregnant horn.

*Jones, S. V.; Belloff, G. B., and Roberts, H. D. B.: Vet. Med. 51:413 (Sept.) 1956.

For vaginal infections, including those caused by *Vibrio fetus*, that may prevent conception, or cause abortion, dispense: FURACIN Suppositories Veterinary, large. Box of 12.

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AVMA REPORT—Continued

State Medical Society, Illinois State Dental Society, Illinois Pharmaceutical Association, Illinois Optometric Society, Illinois Veterinary Medical Association, Illinois Association of Chiropractors.

Council Organization

Our organization is composed of over 25,000 members of the healing arts professions in Illinois. It has become a driving force for good and for understanding in our state.

We have meetings on the third Monday of every month, and one annual meeting. At the annual meeting, we started last year to recognize an outstanding personality in Illinois, who has contributed to the public welfare in general but, technically, pertaining to public health. We are continuing this program. Each year, every organization in our group has the right to submit nominations for this award.

We meet very informally for a dinner meeting. Each component association has five members on the council; so, we have 30 members altogether.

This program is entirely supported by the six state associations. Each one is assessed the same amount of money per year. I will say that the Illinois Medical Association has contributed, from its considerable assets as an association, a tremendous amount of good for all of us. They maintain counsel in Springfield, the capital of Illinois, which informs all the component members of pertinent legislation that might be coming up in the state. Their counsel looks diligently into the activities in the state on all matters that pertain to any of our professions, and reports to us in writing. We can not possibly evaluate in dollars and cents the work that an association like this has done for our veterinary profession in Illinois. We have many, many problems, as you must understand, coming up at every meeting.

You may or you may not know what a terrific problem there has been between optometry and medicine in this country; in

fact, the problem is very serious and medicine has forbidden its men to teach in the optometric colleges.

With the wise guidance of the president of the Illinois Medical Association, Dr. F. Lee Stone—who is patient and understanding and is almost like a father to all of us on the Interprofessional Council—most of this problem has been solved, and medicine and optometry are very good friends in our council.

It is wonderful to see how, by sitting down together every month, we can solve the problems that may come up. In the three years that I have had the pleasure to serve as the veterinary representative, I have found there is no problem than can not be solved by sitting down and talking calmly.

Local Councils

We are going ahead with our local organizations and have several started in Illinois. We invite members from the component local associations to attend our meetings, and we encourage them to get started in new areas. We offer to help by sending some of our members to the different cities to help form local groups.

The good that is coming out of this now, and which will continue in the future, can not possibly be calculated at the moment. But, as we see it in Illinois, it has been one of the great projects for the good of medical science and for the good of the people of Illinois. We can all have confidence in the professions that are serving, to the best of their ability, the people of the state.

In conclusion, we have had many requests from many parts of the country for our constitution and bylaws. It is printed below:

CONSTITUTION AND BYLAWS OF THE ILLINOIS INTERPROFESSIONAL COUNCIL

Constitution

Article I—Names

This organization shall be known as the Illinois Interprofessional Council.

The Conference on Public Relations in Session at San Antonio on Oct. 14, 1956, preceding the annual Meeting of the AVMA



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Article II—Purposes

The purposes and objects of this organization are:

- 1) to promote better cooperation among and between the health professions;
- 2) to aid in the integration of the appropriate activities of the various professional societies and associations interested in the advancement of the health and welfare of the people of the State of Illinois;
- 3) to organize and promote joint scientific meetings for members of the component professional societies and associations on subjects of common interest;
- 4) to organize and promote public meetings for discussion of health problems or dissemination of knowledge on specific subjects connected with health;
- 5) to promote social functions in which its component professional societies and associations may participate so as to cultivate better mutual understanding and good will among them;
- 6) to promote the organization of interprofessional councils in the various counties or other appropriate geographic districts in the state;
- 7) to assist in arranging programs and finding guest speakers for component local councils;
- 8) to disseminate, in any proper and lawful manner, information concerning any proposed or pending legislation pertaining to the public health and the welfare of the health professions, to the end that public benefit may be achieved.

Article III—Charter

This organization shall be duly incorporated as a nonprofit organization under the "General Not-for-Profit Act" of the State of Illinois and all of the statutory provisions of its Articles of Incorporation are by reference thereto incorporated in and made a part of this Constitution, the same as if they were set out herein verbatim.

Article IV—Membership

Section 1.—The membership of this organization shall consist of the professional statewide societies and associations in Dentistry, Medicine, Optometry, Pharmacy, Veterinary Medicine, Chiropractic and other fields in the health professions which may hereafter be proposed to and accepted by the Executive Board of this organization, duly organized and operating as such in the state of Illinois.

Section 2.—Each such professional State society or association shall be represented in this organization by not more than five representatives duly appointed by each professional state society or association for that purpose. Each such representative shall act as such for his respective professional state society or association until his successor shall have been appointed and qualified.

Article V

Section 1.—The officers of this organization shall be a President, three Vice-Presidents, a Recording Secretary and a Secretary-Treasurer.

Section 2.—Each of said officers shall be elected annually by a majority vote of all representatives of the various organizations making up the Council;

each shall hold office until his respective successor shall have been elected and qualified. The President may not succeed himself nor can the office of President be held by a representative of the same component professional state society or association for two years in succession. None of the officers, except the Secretary-Treasurer, shall receive any salary or compensation for acting as such officer.

Section 3.—The Executive Board shall be the policy-making body and shall manage and control the properties and affairs of this organization. The Executive Board shall consist of the Chairmen of the Interprofessional Committees of the various component organizations and the officers of the Illinois Interprofessional Council. The President shall act as Chairman.

Section 4.—(a) In February of each year the President shall appoint a Nominating Committee composed of one member from each organization.

b) The committee shall make its recommendations at the April meeting.

c) The election and installation of officers shall be held in May.

Article VI—Meetings

Section 1.—Meetings of this organization shall be held monthly from September through June at the direction of the Board and at such other times and at such designated places as the Executive Board shall from time to time determine.

Section 2.—The annual meeting shall be held in November.

Article VII—Bylaws

This organization may establish for its future government and regulation such Bylaws, not in conflict with its Constitution, as may be lawful, proper and desirable.

Article VIII—Amendments

Every proposition to alter or amend this Constitution shall be submitted in writing and received and read at one session of any regular or special meeting of this organization and may be voted on at the next session of such meeting, or at any subsequent meeting, when, upon receiving the vote of two-thirds of the representatives present who are entitled to vote, it shall become a part of this Constitution.

Bylaws

Article I—Representatives

Each professional state society or association which is a member of this organization, shall appoint not more than five representatives to appear and vote for it at all meetings of this organization. Each component organization may appoint alternates for their representatives.

Article II—Duties of Officers

Section 1.—The President shall preside at all meetings of this organization and shall perform such other duties as pertain to that office and shall act as Chairman of the Executive Board.

Section 2.—The Vice-Presidents shall assist the President on request, and, in the absence of the



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Other indications: Inflammatory eye diseases, extensive burns, allergic dermatoses, and rheumatoid-like arthritis in animals. Also as supplementary therapy in severe stress conditions, e.g., milk fever, acute mastitis, pneumonia, and shock resulting from surgical procedures such as caesarean section or other major operative procedures.

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President, one shall preside and perform all duties of the President.

Section 3.—The Secretary-Treasurer shall attend all meetings of the representatives or delegates, conduct the correspondence of the organization, keep a record of the minutes of all meetings, collect all fees due this organization from its component professional state societies or associations and perform such other duties as pertain to the office of Secretary-Treasurer. He shall make an annual report to the representatives of all monies and other funds received and disbursed on behalf of this organization in due course of business.

Section 4.—The Secretary-Treasurer shall be the only paid officer of this organization, but his compensation, which shall be determined by the Executive Board, shall be nominal.

Article III—Meetings

Section 1.—A majority of the members of the Executive Board shall be necessary to constitute a quorum for the transaction of business at any meeting of the Executive Board.

Section 2.—An attendance of twelve representatives shall be necessary to constitute a quorum for the transaction of business at any meeting of the membership of this organization.

Section 3.—At least seven days' prior notice of any annual or regular meeting of the membership of this organization shall be given to each representative, either personally, by mail, by telephone or by telegraph; and at least three days' prior notice of any special meeting of the membership of this organization shall be given to each representative, either personally, by mail, by telephone or by telegraph.

Section 4.—At least ten days' prior notice of any annual or regular meeting of the Executive Board shall be given to each member of the Executive Board, either personally, by mail, by telephone or by telegraph; and at least three days' prior notice of any special meeting of the Executive Board shall be given to each member of the Executive Board, either personally, by mail, by telephone or by telegraph.

Section 5.—In case of any special meeting of the Executive Board, the notice thereof shall state the particular business to come before such special meeting, and no other business shall be transacted thereat.

Section 6.—Attendance at any annual, regular or special meeting shall constitute a waiver of notice of such meeting on the part of such attendant, except where the attendance is for the express purpose of objecting to the transaction of any business at the meeting because the same has not been lawfully called or convened, and any meeting at which a quorum is present, shall be as valid as if regularly called on due notice.

Section 7.—Any action taken or business transacted by the officers on behalf or in the name of this organization, in the interim between meetings of the membership or of the Executive Board, shall be deemed to have been duly authorized if the required authority therefore is obtained by the officers through a "Mail Vote" of the representa-

tives, or of the members of the Executive Board, as the case may be, the same as if such votes thereon had been obtained at any duly called and convened meeting.

Section 8.—If the required vote on any action taken on behalf or in the name of this organization is not unanimous, such action shall include an affirmative expression of the dissent of each component professional state society or association, whose representative or representatives cast the dissenting vote or votes thereon.

Article IV—Fees and Assessments

Section 1.—The dues of each component professional state society or association shall be one hundred dollars (\$100.00) per annum payable May 1st of each year.

Section 2.—In the event of a deficiency of funds for the work of the Council, the amount of the deficiency shall be prorated among the component groups by majority vote and requests shall be submitted to the governing bodies of the component organizations for such additional funds as prorated to cover the deficiency.

Article V—Property Rights, Contracts and Liabilities of Members

Section 1.—The rights of the members in this organization in and to any of its assets shall be as provided by law for members of corporations not for pecuniary profit and as may be provided in the Constitution and Bylaws of this organization not inconsistent with law.

Section 2.—Neither of the component professional state societies or associations which are members of this organization, nor any of their respective representatives in this organization, nor any of their respective officers, directors or general memberships, shall be individually, jointly, severally or otherwise liable for the debts of this organization, nor liable to pay any monies to this organization other than the payment of initiation fees or assessments which are payable by each component professional state society or association under the bylaws of this organization.

Section 3.—This organization shall make no contract written, oral or otherwise, or incur any contractual liability on behalf of or as agent for any of its component professional state societies or associations unless expressly authorized or confirmed by each such component professional state society or association in writing.

Article VI—Amendments

Every proposition to alter or amend these Bylaws shall be submitted in writing and received and read at one session of any regular or special meeting of this organization and may be voted for at the next session of such meeting, or at any subsequent meeting, when, upon receiving the votes of two-thirds of the representatives present and entitled to vote, it shall become a part of the Bylaws.

Article VII

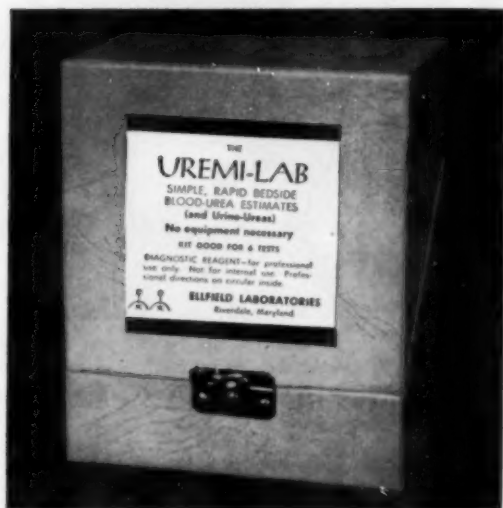
The latest edition of Robert's Rules of Order shall prevail in all points not covered by this Constitution and Bylaws.

— *Ellfield* —



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Veterinarians find it speeds a confident diagnosis to estimate blood urea simply, rapidly, on-the-scene. They can report to the animal owner the progress of their antibiotic or sulfa therapy in infections involving kidney blockage—Prevent loss of valuable pets or livestock from undetected incipient uremia—Avoid rejection of carcasses thru marketing while uremic.

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*30 minutes after Paxital
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Broad clinical application Paxital is useful to eliminate barking and relieve nervousness or tension, especially in hospitalized animals. It is of value to reduce biting and scratching in skin conditions . . . for minor surgery when a general anesthetic is contraindicated or undesirable . . . as an adjunct in major surgery to permit smoother induction of anesthesia and an uneventful recovery (and to reduce the amount of barbiturates necessary) . . . to counteract shock and as an antiemetic.

Dosage: Average dose (for 20 to 30 lb. dog): *orally*—50 to 100 mg. two or three times daily, as indicated; *parenterally*—2 cc. (50 mg.). Paxital may be administered intravenously, intramuscularly or subcutaneously. Occasionally, an additional 2 cc. may be required to obtain the desired clinical response. Tranquilization is obtained usually within 45 minutes following oral administration. Onset of action following parenteral administration is more rapid.

Contraindications: Hepatic diseases or disorders. Central nervous system involvement.

Packaging: 25 and 50 mg. tablets in bottles of 100 and 500; 2 cc. ampuls (25 mg./cc.) in boxes of 10 and 50.

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Paxital also has a potentiating effect on anesthetic and analgesic agents. Hence, any desired plane of anesthesia may be achieved with smaller, safer dosages of anesthetics. Induction is smoother and recovery uneventful.

Administration. Paxital is conveniently supplied for oral, subcutaneous, intravenous or intramuscular administration. Average oral dosage (for a 20 to 30 lb. dog) is 50 to 100 mg. two to three times a day. Parenterally, the dose is 50 mg. (2 cc.). Tranquilizing action usually follows within 45 minutes after oral administration, 30 minutes after subcutaneous or intramuscular injection, and within a few minutes following intravenous injection.

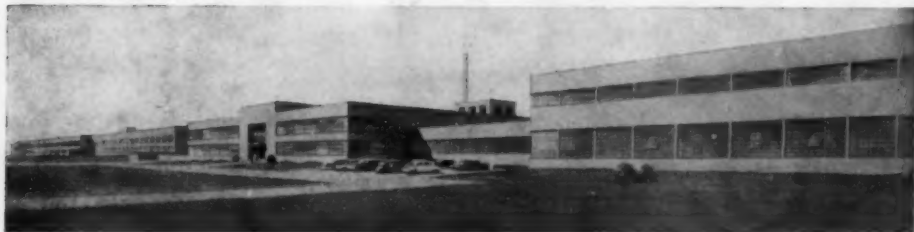
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the way it was

"This continues to be an important problem to the veterinarian in dairy cattle practice. Some years ago, it appeared to be primarily a disturbance of such a nature that the body was unable to metabolize the fats—more carbohydrate was needed, more ready energy. Many cases responded to glucose intravenously, supported by the feeding of cane molasses or corn syrup. Others responded when chloral hydrate was administered, its effects being to liberate the glycogen stored in the liver.

"There were, however, cases which did not respond to treatment of this nature, but did improve markedly when anterior

pituitary extract was injected. This still did not produce the desired result in all cases, and massive doses of vitamin A were administered. Results were spectacularly good in some cases, but dismally poor in others. When treatment can be accompanied by a change to new pasture, remarkable recoveries may be seen, but obstinate cases still occur in animals that are pasturing on lush green legumes.

"So the search for the underlying cause, and for a means of preventing or correcting the condition, still goes on."

Report of the Committee on Diseases of Dairy Cattle, R. C. Klusendorf, Chairman, J.A.V.M.A., 107:355 (Nov.) 1945.

1945

A PRACTITIONER

...died with great success in ...
...a complete failure in ...
...it was felt that ...
...massive dosages might ...
...in treating these cases. ...
...I see many cases of ...
...are on excellent pasture, ...
...are not on a low vint...

...herd that I take care of, ...
...12 cases of acetone ...
...three days after making ...
...feeding corn silage. Many ...
...take a long time to make a ...

...times, acetone will ...
...shortly after a heat period, ...
...or excessive exercise. There ...
...be constantly on the lookout ...
...when called to see a ...
...there may be some ...
...that needs treatment ...

...I first started to practice ...
...diseases every cow that I ...
...this disease. This, I believe ...
...purpose. First, it ...
...impression on the client ...
...man ran an on-the-spot ...
...in the correct diagnosis of ...
...it served as an aid to ...
...when he was in doubt as to ...
...diagnosis. However, one still ...
...obtain that a positive Rose ...
...of acetone rather than ...
...to some other disease ...
...metritis or metritis.

...During this time, I noticed ...
...ing too many cases of ...
...anemia. I thought perhaps ...
...dosage...

the way it is

"There appears to be general agreement among those who have studied the disease (primarily ketosis) that prompt stimulation of gluconeogenesis or glucose therapy constitutes the most effective treatment. It is noteworthy that a high percentage of cows treated with 100 mg. prednisolone acetate

that this is adequate dosage. Less severely affected cows may require only 50 mg. It is therefore, effective in lower dosages than other presently available glucocorticoids recommended for treatment of ketosis."

Dr. S. P. Nisbet, D. V., and Dr. H. C. ...
...Prednisolone acetate ...
...J. A. V. M. A., 107:355 (Nov.) 1945.

1957

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Observations on the Cheek Teeth of the Dog

L. E. ST. CLAIR, D.V.M., Ph.D., and N. D. JONES, D.V.M.

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THE DIFFERENT types of skulls in dogs have greatly influenced the position, size, shape, and form of the cheek teeth. The modifications of the tooth designs follow certain set patterns. They are adaptive measures which attempt to meet the requirements of the individuals in spite of breed characteristics.

The normal permanent dental formula for the dog includes four premolars and two molars on each side in the upper jaw and four premolars and three molars per side in the lower jaw. There are three temporary cheek teeth on each side, above and below.¹

Although most of the cheek teeth of the dog are designed for holding and shearing, some possess crushing surfaces. Those that do not have predecessors are members of the primary dentition. They include the permanent molars and the temporary molars.² The premolars, which replace the latter, are in the secondary series. Some of the changes in the maxilla and mandible and their effects on the placement of teeth in brachycephalic breeds have been described.³ The number of roots, the general shape of the teeth, and the schedule of eruption have been discussed by many authors.⁴ However, exact morphological changes due to eruptive movements and to head shape, as well as the relationship of the various teeth, have been given little attention.

OBSERVATIONS

There are three types of cheek teeth in the dog: premolar, carnassial, and molar. The crown of a typical premolar is longer

than it is wide or high, and has a sharp prominence or cusp which is situated in the center or slightly anteriorly (fig. 1). The ridge posterior to the cusp is inter-

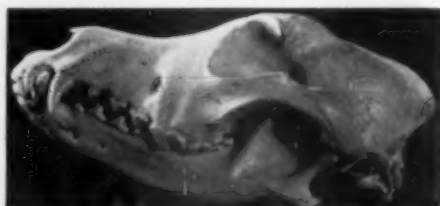


Fig. 1—Lateral view of dog's skull showing occlusion of teeth.

rupted by one or more small cusps. The crown is also more convex laterally than medially. There are two roots. The carnassial type is, in general, that of a large premolar. Molars are short and round and contain a number of low cusps on a flattened table surface. The typical molar of the upper jaw has three roots, that of the lower jaw, two.

Permanent Molars.—The first upper molar (M^1) is roughly triangular in cross section with a rounded apex which is directed medially (fig. 2 to 5). There are two major lateral cusps which are higher than the medial ones. The anterior cusp of the lateral pair is slightly higher than the posterior one. The second molar (M^2) is like the first, except that it is smaller. The difference in height between the medial and lateral cusps is not as great as in M^1 . There are three roots: two buccal, one lingual.

The first lower molar (M_1) is the large carnassial (sectorial) tooth (fig. 7 to 9).

From the Department of Veterinary Anatomy and Histology, College of Veterinary Medicine, University of Illinois, Urbana.

It has one anterior and one posterior root. The anterior two thirds of the crown is shearing in type but the posterior one third is flattened for grinding. The posterior of the two shearing cusps is the

larger. The lateral surface of the crown is smoother and more convex than the medial surface. The second molar (M_2) is like the grinding portion of the first molar; it has two roots. The third molar (M_3) is a small,

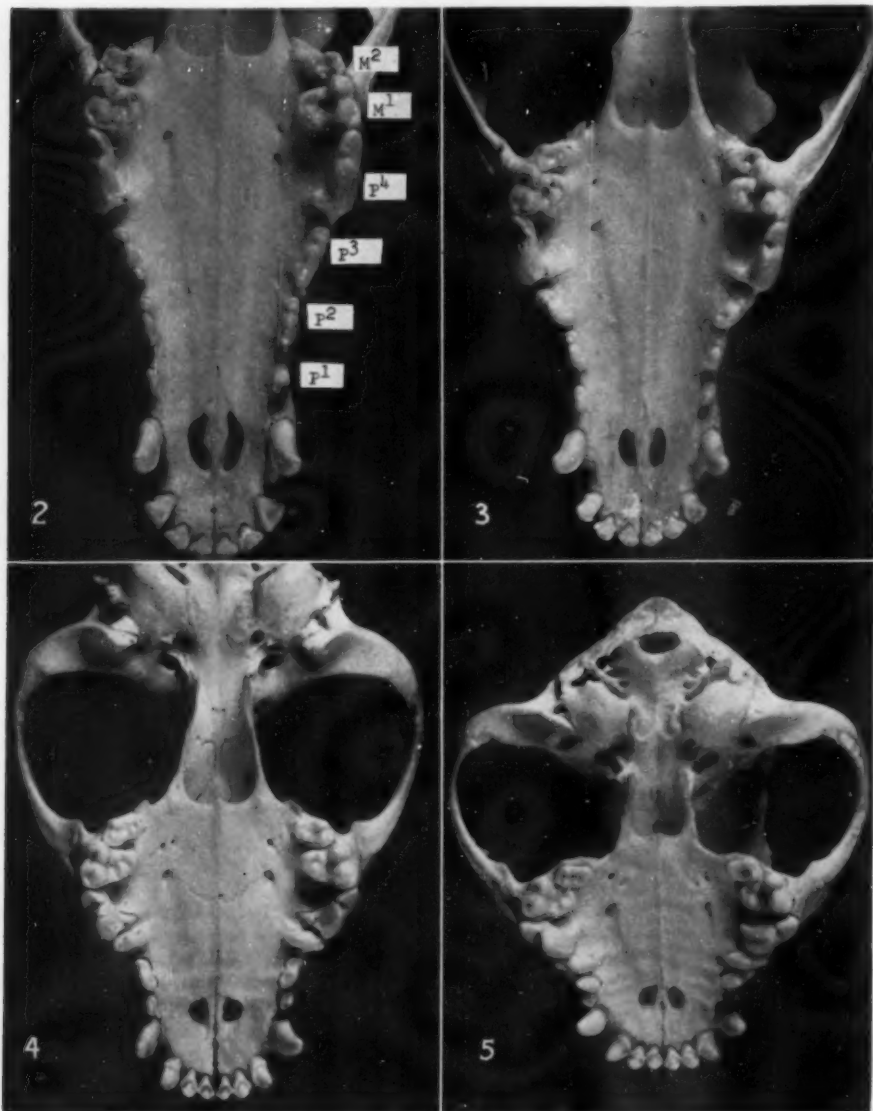


Fig. 2—Upper permanent teeth of a dog. Dolichocephalic skull.

Fig. 3—Upper permanent teeth of a dog. Mesaticephalic skull.

Fig. 4—Upper permanent teeth of a dog. Brachycephalic skull.

Fig. 5—Upper permanent teeth of a dog. Extreme brachycephalic skull.

round, single-rooted tooth with a molari-form surface. The cusps are more prominent on the grinding surface of M_1 than on M_2 and much more so than on M_3 , where there is only a single small elevated area.

Premolars.—The first upper premolar (P^1) is single rooted and has a small crown with one pointed cusp which is convex laterally and concave medially (fig. 2 to 5). The second (P^2) and third (P^3) teeth are typical upper premolars. Each has a large anterior cusp and one or more small posterior cusps. The length is greater than the width and the lateral surface is convex. The two roots are placed toward the anterior and the posterior parts of the tooth. The third premolar is slightly larger than the second.

The fourth one (P^4) is the large carnassial (sectorial) tooth. It has a posterior, an anterior, and a small anteromedial root. There is a small cusp projecting from the anteromedial root. There are two major lateral cusps, the anterior one being the larger, which are shaped like those of P^2 and P^3 . The medial surface of the crown is smooth as far anteriorly as the small medial cusp.

The first lower premolar (P_1) (fig. 7 to 9) is like P^1 . The lower second (P_2), third (P_3), and fourth (P_4) are like the P^2 and P^3 . The lower teeth tend to be shorter and, thus, slightly smaller than those of the upper jaw. They increase in size from before backward in the series.

Deciduous Molars.—The first upper deciduous molar is small and premolar in

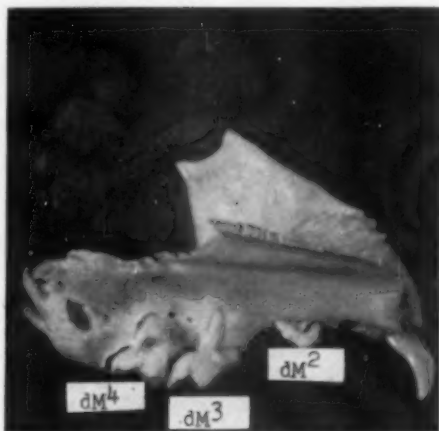


Fig. 6—Maxillary deciduous teeth of a dog.

type (fig. 6); the second (dm^2) is like the upper carnassial tooth; and the third (dm^4) resembles M^1 .

The lower first (dm_2) and second (dm_3) deciduous molars are like the typical lower premolars. The first is smaller than the second. The lower third (dm_4) resembles the lower carnassial tooth (fig. 9, 10). The deciduous molars are, of course, much smaller than their successors.

Occlusion.—The more anterior premolars do not contact those of the opposing jaw. The first lower premolar is the most anterior cheek tooth (fig. 1). The other upper and lower premolars alternate in position, except in brachycephalic skulls. The P^4 is, for the most part, lateral to P_4 .

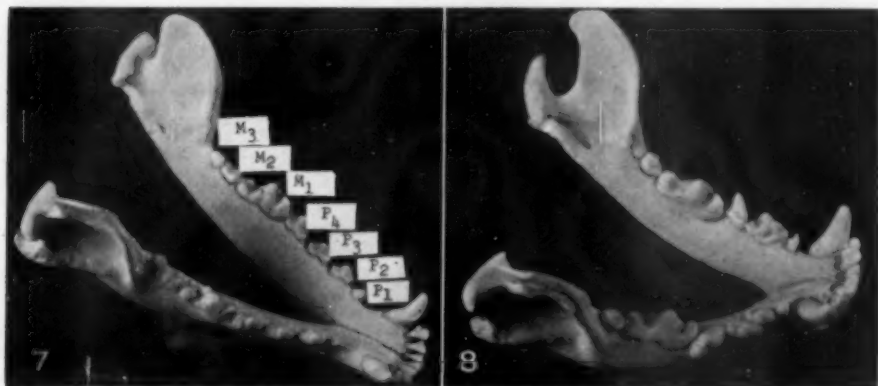


Fig. 7—Lower permanent teeth of a dog. Mesaticephalic skull.

Fig. 8—Lower permanent teeth of a dog. Extreme brachycephalic skull.

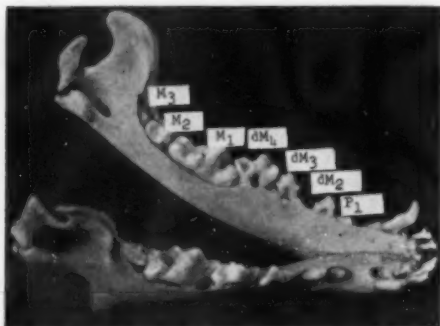


Fig. 9—Lower jaw of a dog showing temporary and permanent teeth.

and M_1 . The M_1 contacts P^4 as far forward as its medial root, and the anterior two thirds of the medial cusps of M^1 . The lateral two cusps of M^1 extend farther laterally than the opposing lower teeth. The M^2 contacts the posterior part of M_2 and often the anterior portion of M_3 .

The longer the skull, the greater is the interval between contiguous premolars. As the upper jaw shortens, the ratio of the width to the length of the hard palate becomes closer to unity (fig. 2 to 5). The width may even exceed the length in extreme cases. Since the teeth of the upper jaw are not reduced in size as much as the jaw itself, they tend to turn transversely or are lost. The zygomatic arch joins the alveolar area at the P^4 - M^1 junction (fig. 2). In the shorter skulls, the anterior part of the arch is more nearly perpendicular to the face and, thus, seems to move forward relative to the position of the molars (fig. 5). The lateral migration is at a maximum between the buccal surfaces of P^4 and M^1 . The third premolar and, sometimes, the second and even the first are rotated anteromedially (fig. 4, 5) to a degree depend-

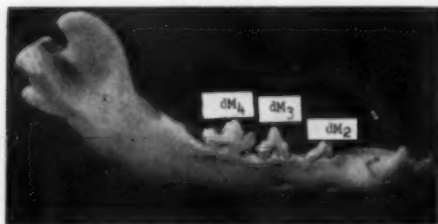


Fig. 10—Mandibular deciduous teeth of a dog.

ing on the shortness of the skull. Irregularities in the sequence and direction of rotation are often observed.

The lower jaw also shortens but the process is delayed and incomplete. The jaw becomes wider and more curved (horseshoe shaped) (fig. 8). When the teeth become crowded, the last premolar turns its anterior edge medially and moves slightly lateral to the first molar. There tends to be a loss of teeth on both ends of the series. When the last molar has been lost, the second molar may be reduced to a form characteristic of the last one. As the anterior part of the upper arcade is shifted dorsally, the lower jaw follows suit, resulting in a curved mandible—a "rocking chair" effect.

The alveolar borders of both jaws are sufficiently long to preclude the necessity for turning of the deciduous molars (fig. 6, 10). Deciduous M_2 and dM^2 do not occlude with other teeth. Deciduous M_1 contacts anteriorly the medial part of dM^3 and posteriorly the medial portion of dM^4 .

Position of Permanent Teeth in Relation to Deciduous Teeth as They Erupt.—In the upper jaw, P^2 and P^4 replace dM^2 and dM^4 . The third premolar erupts between dM^2 and dM^3 . The first premolar appears anterior to dM^2 .

In the lower jaw P_2 , P_3 , and P_4 replace dM_2 , dM_3 , and dM_4 , respectively. The P_1 erupts anterior to dM_2 .

Type of Crown.—Sharp surfaces shear or tear the food when the opposing teeth contact or slide past each other. If they do not occlude, they hold or grasp the object. The molariform surfaces grind or mash the material.

In the upper jaw P^1 , P^2 , P^3 , and dM^2 possess shearing surfaces. The fourth premolar has a shearing surface, except medially where a small area is of the grinding type. The first molar grinds medially and shears laterally. The second molar possesses only a grinding surface. Deciduous M^3 is like P^4 and dM^4 is like M^1 .

In the lower jaw P_1 , P_2 , and dM_2 possess shearing surfaces. The P_3 , P_4 , dM_3 , and dM_4 shear mostly but have very small areas posteriorly for grinding. The M_1 (carnassial) has a shearing area covering its anterior two thirds and a grinding area covering its posterior one third. Deciduous M_4 is like M_1 . The M_2 and M_3 possess grinding surfaces only.

DISCUSSION

The three types of cheek teeth (premolar, carnassial, and molar) are represented in the upper jaw in the deciduous molar series. In both jaws, each temporary tooth resembles a permanent tooth placed further posteriorly. The true molar type is not represented in the deciduous molars of the lower jaw.

Only the anterior two thirds of the lower carnassial tooth (M_1) is truly shearing in form. The posterior one third is molari-form. The carnassial type is represented in the deciduous molar series, especially by dM_4 and somewhat by dM_3 . The lower carnassial tooth, with its carnassiomolar configuration, occludes with both a shearing and a grinding tooth. The upper carnassial tooth, except for its small medial root, is an enlarged model of an ordinary premolar.

Since M^1 and dM^4 , which are adjacent teeth for a time, are similar in shape and since P^1 does not replace a deciduous tooth, the deciduous tooth at the anterior end of the series is probably the one that is absent. The deciduous molars are thus numbered 2, 3, and 4. The first molar resembles the last deciduous molar in both jaws more than it does the last premolar. Even in the lower jaw, the last two deciduous molars, although they are like the premolars, have more distinct grinding surfaces. Thus, the deciduous molars and the molars are more alike than are the premolars and the molars.⁵ Consequently, the term "deciduous molar" is more fitting than the term "deciduous premolar" for the deciduous cheek teeth.

The upper carnassial tooth shears by passing lateral to the lower one. Since they do not occlude, the more anterior premolars are used for grasping and holding. The deciduous molars occlude in the same manner as the permanent teeth which are shaped like them.

As the face shortens in brachycephalic breeds, the upper jaw is displaced upward anteriorly from a pivot point which is between P^4 and M^1 . The migration of the teeth and zygomatic arch also occurs at this point. The more anterior teeth turn anteromedially as a result of the recession of the jaw. The lower jaw does not recede as much as the upper one. However, as it shortens, it does turn upward to follow the upper jaw. It widens at the angles and develops a rocker appearance.

SUMMARY

1) The form and special features of the cheek teeth of the dog are described. The cheek teeth are premolar, carnassial, and molar in type. Each of the three deciduous molars represents one of these types.

2) A temporary cheek tooth is not replaced by the one which it most closely resembles. The temporary tooth is like the permanent tooth that erupts posterior to it.

3) The more anterior premolars are used for holding, the carnassial teeth for shearing, and the molars principally for grinding.

4) In brachycephalic types, the cheek teeth are crowded and may be lost at the ends of the series. The premolars tend to turn transversely, particularly in the upper jaw. The widening of the hard palate occurs, especially at the carnassiomolar junction. The lower jaw, which is not affected as much as the upper one, broadens to a "U" shape and turns upward anteriorly to follow the pattern set by the upper jaw.

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Short Reports on Zoonoses

Toxocara canis infection was found in a girl, 3 years old, in Pennsylvania, who had a history of eating dirt. The family dog was found to also be infected with *T. canis*.—Pub. Health Serv., Jan. 19, 1957.

• • •

Leptospirosis was diagnosed in a veterinarian in California. He had treated a number of cattle with leptospirosis and, three and one half weeks before his illness, had treated a dog with the disease. *Leptospira pomona* was isolated from a guinea pig injected with the patient's urine and the agglutination test was positive for *L. pomona* in titers of 1:160 and 1:320.—Pub. Health Serv., Jan. 26, 1957.

Public Health Significance of Antibiotics in Foods

CHARLES G. DURBIN, V.M.D.

Washington, D. C.

THERE HAS BEEN a tremendous increase in the use of antibiotics for growth-promotion of animals and for prevention and treatment of disease in both plants and animals. The newest use for these versatile products is in the field of food preservation. At the present time, chlortetracycline is being used to extend the shelf life of poultry. Other uses in foods and food products for preservation have been suggested but at the present time, in this country at least, only chlortetracycline and oxytetracycline for poultry dip have received official sanction.

ORIGINAL PURPOSE OF THE ACT

The original Food and Drug Act of 1906 was enacted, in part, to prevent addition of poisonous or deleterious substances to the human food supply. The Food, Drug, and Cosmetic Act of 1938 takes into account food for animals by defining, in part, the term "food" as "articles used for food or drink for man or other animals, and articles used for components of such articles." Section 402 of the Act states, in part, "a food shall be deemed to be adulterated (a) (1) if it bears or contains any poisonous or deleterious substance which may render it injurious to health; but in case the substance is not an added substance such food shall not be considered adulterated under the clause if the quantity of such substance in such food does not ordinarily render it injurious to health." Because of the various uses of antibiotics, the Food and Drug Administration through the Department of Health, Education, and Welfare was prompted to issue the following Statement of Policy (3.29) of Nov. 30, 1955.

Direct or indirect addition of antibiotic drugs to foods for human consumption. (a) The Food and Drug Administration has received inquiries concerning the use of antibiotic drugs as food preservatives. Careful consideration has been given to this question and the conclusion has been reached that such use constitutes a public health hazard. Consumption of food so treated may cause sensitization of the consumer to such antibiotics

and may result in the emergence of strains of pathogenic microorganisms resistant to these drugs.

b) The presence of antibiotic drugs in foods intended for human consumption, or the direct or indirect addition of such drugs to such foods, may be deemed an adulteration within the meaning of section 402 of the Federal Food, Drug, and Cosmetic Act (sec. 402, 52 Stat. 1046; 21 U.S.C. 342).*

c) This statement of policy will not bar the establishment of safe tolerances for antibiotic drugs in or on raw agricultural commodities under the provisions of section 408 of the Act, where suitable evidence of usefulness of the antibiotic drugs and of safety of the residues is available.

ANTIBIOTICS IN FOODS

Antibiotics are considered as pesticide chemicals, under the present Food, Drug, and Cosmetic Act, when used as preservatives on or in raw agricultural commodities. The first commercial use of an antibiotic in the processing of a perishable food became possible on an interstate basis on Nov. 30, 1955, when the Food and Drug Administration cleared chlortetracycline for use on uncooked poultry. This action represented the final stage of clearance for this substance under section 408 of the Act, which provides for the establishment of safe tolerances for residues of pesticides in or on raw agricultural commodities. This section, the so-called "Miller Bill," was added to the Act in 1954. Under it, the Secretary of Agriculture must first issue a certificate of usefulness (a judgment of utility) before the Secretary of Health, Education, and Welfare acts on tolerance or judges the safety of the application that is proposed. Chlortetracycline has met these

*Sec. 402. A food shall be deemed to be adulterated (a) if it bears or contains any poisonous or deleterious substance which may render it injurious to health; but in case the substance is not an added substance such food shall not be considered adulterated under this clause if the quantity of such substance in such food does not ordinarily render it injurious to health; or (2) if it bears or contains any added poisonous or added deleterious substance which is unsafe within the meaning of section 406; or (3) if it consists in whole or in part of any filthy, putrid, or decomposed substance, or if it is otherwise unfit for food; or (4) if it has been prepared, packed, or held under insanitary conditions whereby it may have become contaminated with filth, or whereby it may have been rendered injurious to health; or (5) if it is, in whole or in part, the product of a diseased animal or of an animal which has died otherwise than by slaughter; or (6) if its container is composed, in whole or in part, of any poisonous or deleterious substance which may render the contents injurious to health.

Dr. Durbin is with the Food and Drug Administration, Washington, D. C.

Presented before the Combined Sections on Poultry and Public Health, Ninety-Third Annual Meeting, AVMA, San Antonio, Texas, Oct. 15-18, 1956.

criteria in regard to poultry, and the Administration has stated, "The tolerance of 7 parts per million is established for residues of chlortetracycline in or on uncooked poultry." This decision was based on evidence in the petition that cooking helped to destroy this amount of the antibiotic so that none is left when the meat is served.

Investigations conducted by the Antibiotic Division of the Food and Drug Administration have shown that chlortetracycline or penicillin could be found in the blood serum, tissues, and the eggs of chickens fed 50, 100, or 200 parts per million of the drug. The small amounts found in chicken tissues were destroyed following frying. The antibiotic disappeared from the tissues or eggs within a few days after the antibiotic-containing feed was withdrawn. When eggs containing antibiotics were hard-boiled, no activity could be detected in the majority of those tested. Storage under refrigeration for considerable periods did not diminish the concentration of the drug.

Reports have shown that when oxytetracycline was fed to swine at the rate of 200 Gm. per ton of feed, or less, none could be found in the tissues, but at levels of 1,000 to 2,500 Gm. per ton, the antibiotic could be detected. However, one day after withdrawal of medicated feed, all residues were gone. When antibiotic levels could be obtained in the tissues, cooking destroyed it. Based on the available information, we do not consider the tissue levels of antibiotics following feeding to have public health significance.

ANTIBIOTIC RESIDUES IN MILK

To determine the incidence of antibiotic residues in market milk, three nation-wide surveys have been conducted by the Food and Drug Administration.

In the first survey (1954), 3.2 per cent of 94 samples were shown to contain penicillin. In this survey, a number of other dairy products such as cheese, butter, dried milk, and skim milk were tested. No antibiotics were found in these products.

In the second survey (1955), of 474 samples of milk tested, 11.6 per cent were found to contain penicillin in concentrations varying from 0.003 to 0.08 units per milliliter. The highest amount was 80 units per quart.

In a third survey (1956), of 1,706 samples collected in all 48 states and the District of Columbia, penicillin in concentra-

tions of 0.003 to 0.55 units per milliliter was found in 5.9 per cent of the samples examined. In addition, one penicillin-positive sample apparently contained streptomycin and 17 samples (1%) appeared to contain either bacitracin, one of the tetracyclines, or a combination of these drugs. Penicillin was confirmed by the penicillinase identity test but the other antibiotics could not be specifically identified.

Mastitis preparations are required to carry a warning statement in their labeling to the effect that "milk from treated segments should be discarded or used for purposes other than human consumption for at least 72 hours after the last treatment." Although antibiotics may be illegally added to milk to lower bacterial counts, the bulk of the milk on the market which contains antibiotic residue undoubtedly is the result of complete disregard of this warning.

Following the second milk survey, the results of our findings were sent to a number of nationally recognized experts in the field of antibiotic therapy, pediatrics, and allergy and answers to the following questions were requested:

1) Are these amounts of antibiotics in milk dangerous for the consumer to ingest on the basis of his daily consumption?

2) Specifically, do you think these amounts may:

- a) Sensitize a nonsensitive individual?
- b) Cause a reaction in the exquisitely sensitive individual?
- c) Cause emergence of the resistant microorganisms?
- d) Change a normal intestinal flora?
- e) Change the normal oral flora?

Of 31 replies, the majority were "no" or "probably not" (4) to all questions except 2(b). A great majority were of the opinion that the ingestion of the amounts of penicillin found in milk might conceivably cause a reaction in an extremely sensitive individual.

Following publication of the results of the third survey, a number of outstanding medical consultants, veterinarians, representatives of antibiotic producers, and dairy associations were invited to meet with a medical advisory panel† in Washing-

†Drs. Wesley W. Spink, professor of medicine, University of Minnesota, chairman; Chester S. Keefer, director, School of Medicine, Boston University; Harry F. Dowling, professor of medicine, University of Illinois; Samuel M. Feinberg, professor of medicine, Northwestern University; Perrin H. Long, professor of medicine, New York State University; Walsh McDermott, professor, Public Health and Preventive Medicine, Cornell University; Bernard B. Siegel, Department of Medicine, Jewish Hospital, Brooklyn, N. Y., and Robert Popper, Veterans' Administration Hospital, Memphis, Tenn.

ton, D.C., September, 1956, in an attempt to aid us in finding a satisfactory solution to this perplexing problem. We have not as yet received full comments from the members of the panel based on the discussions that took place during the day-long conference.

Representatives of the Public Health Service stated, in part, that it has not yet been demonstrated to be a health problem of sufficient significance to justify a ban on the use of penicillin preparations for the infusion or injection treatment of mastitis in dairy cattle. They felt that any prohibited action which could have an effect of undermining the public's confidence in penicillin or which could lead to a reduction in milk consumption would, in their opinion, create health problems of greater magnitude than that which would result from penicillin used in the treatment of bovine mastitis. It was their view that additional data should be accumulated to indicate whether penicillin in milk in the amounts indicated by our surveys has any effect on human consumers and, if so, the severity and frequency of harmful reactions. They further indicated that the U.S. Public Health Service would be glad to assist in such an undertaking and would be guided by the results in revising its position and action relative to the potential health hazard of penicillin in milk.

In summing up a panel discussion at the First International Conference on Antibiotics in Agriculture in 1955, the chairman said, in part, "Certainly the evidence to date would not lead one to believe that the risks outweigh the great benefits which flowed from the use of antibiotics in animals, to improve nutrition or to prevent or treat diseases, for that matter from their use as crop sprays in combating plant diseases for the preservation of food. In any event, this area of antibiotic residues needs continuing study and research, and a fixed and rigid posture should not be taken without a sound basis of evidence. One must weigh the great advantages against the slight risks or the disadvantages. When one attempts to add anything to our food or drink he is immediately in trouble with the public."

CONCLUSION

Although there are glowing reports of the advantages to be realized from the use of antibiotics, it is well to sound again a

note of caution. Regulatory officials in the United States believe their safety has not been established for most of the proposed uses. The status of antibiotics in food in the United States is that (1) they may be used when no residues remain in the food, (2) they may be used when residues remain in the uncooked food provided the food is always cooked and that cooking always destroys the antibiotics (and provided the residues in the uncooked product are within an official tolerance), and that (3) they are being considered for uses in which there will be some of the antibiotic in the food as it is eaten. Their safety under these conditions has not been established.

Some Livestock Trends Since 1950

Cattle numbers in the United States have, in the past two years, leveled off at a little less than 100 million head. In the past six years, all cattle increased 39 per cent and beef cattle 79 per cent in ten southeastern states compared with 25 and 47 per cent, respectively, for the entire country. There has been some increase in small beef herds in the cornbelt states. Cattle feeding has increased in some southeastern states and, in two southwestern states, it more than doubled. In California, 68 per cent of the cattle were fed in lots, with an annual turnover of 10,000 head or more each.

In 1952, two thirds of all range cattle in western states were sold direct to feeders, only 13 per cent going through terminal public markets which, a generation earlier, had handled the bulk of these cattle. Probably 90 per cent of the finished cattle from western and southwestern states are now sold directly to the packers.

Hog production in southeastern states decreased 12 per cent since 1950 compared with 7 per cent for the entire country. In the same period sheep production, in southern states, has increased greatly. Lambs are produced in November and December, fattened on pasture, and marketed in April and May. Total sheep production in the entire country has changed little.—*Breeder-Stockman, Feb., 1957.*

A farmer in Alabama developed contagious ecthyma after treating a flock of lambs for "sore mouth"; the latter was diagnosed by a veterinarian.—*Pub. Health Serv., Jan. 17, 1957.*

Regurgitation in Pups

The persistent regurgitation of food, especially solids, by young pups may be due to (1) megaesophagus, (2) prevention of expansion of the esophagus by a persistent aortic arch, (3) achalasia (stenosis of the esophagus at the cardia), and (4) stenosis of the pylorus. The first two conditions are discussed in the following case reports.

I. Persistent Aortic Arches*

J. RICHARD NAYLOR, D.V.M.

Denver, Colorado

Recently, a German Shepherd, 3 months old, was examined. It had a history of persistent regurgitation since it had been

Dr. Naylor is a small animal practitioner in Denver.

*Two excellent references to this condition are found in the JOURNAL (July 1, 1956: 1-5, 5-7). These articles review the literature and describe the embryonic development of the condition.—ED.

weaned. It was smaller and thinner than its litter mates and had been unable to retain solid food for more than 15 minutes. It also regurgitated liquids when more than 1 oz. was taken. The condition was not relieved when atropine and phenobarbital were given.

A radiograph of the thorax, taken immediately following the oral administration of barium solution, showed the solution accumulated in a dilatation of the esophagus in the region anterior to the fourth thoracic vertebra. This finding is characteristic of a persistent ductus arteriosus.

On the exploratory thoracotomy,† the ductus was found, double ligated, then severed. The pup had an uncomplicated convalescence and the regurgitation immediately diminished; in seven days, it was able to eat and retain solids.

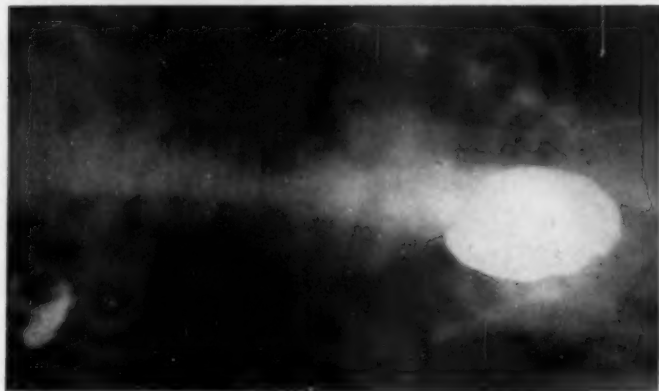
A similar condition occurred in a pup of

†The author thanks John Grow, M.D., and Donna Lee True, M.D., for their cooperation.

Fig. 1—Radiograph (lateral view) of a 5-month-old German Shepherd showing pooling of barium solution in the esophagus just anterior to the heart at a level of the fourth thoracic vertebra.



Fig. 2—Radiograph (ventrodorsal view) of the same dog shown in fig. 1) showing pooling of barium solution just anterior to the heart.



a subsequent litter of the same dam. The symptoms were identical and the response to surgery was equally successful.

2. Megaesophagus in a Pup

SIDNEY J. MICHAEL, V.M.D.

Erie, Pennsylvania

A German Shepherd male pup, 10 weeks old, had been regurgitating immediately after eating ever since it began to take solid food.

mediately (fig. 1). This revealed a barium-infiltrated mass which indicated an esophagus of considerable size. The enlargement extended from a point behind the second rib to the cardiac sphincter.

On exploratory thoracotomy, the condition was found to be irreparable. The esophagus was greatly dilated and packed with food. Euthanasia was performed. The affected portion (fig. 2) measured 25 cm. in length and 7.5 cm. in diameter. The mate-



Fig. 1—Radiograph, lateral view, of thorax of a pup showing a dilated esophagus containing food and barium sulfate.

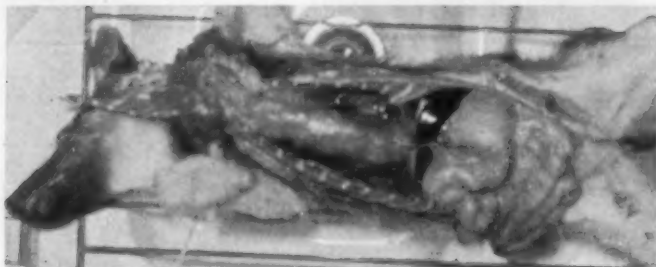


Fig. 2—Photograph of pup, with sternum cut away, showing dilated esophagus.

Therefore, the pup was fed finely ground wet meal containing barium sulfate, and a radiograph of the thorax was taken im-

mediately. This revealed a barium-infiltrated mass which indicated an esophagus of considerable size. The enlargement extended from a point behind the second rib to the cardiac sphincter. On exploratory thoracotomy, the condition was found to be irreparable. The esophagus was greatly dilated and packed with food. Euthanasia was performed. The affected portion measured 25 cm. in length and 7.5 cm. in diameter. The material in the esophagus had formed a dry semisolid bolus with an odor which indicated that it had been present for some time.

Dr. Michael is a small animal practitioner in Erie, Pa.

3. Megaesophagus in a Pup

L. O. GOODLOE, D.V.M., and
S. A. SCHICHOR, D.V.M.

Omaha, Nebraska

A male Manchester, 7 weeks old, was submitted with a history of persistent regurgitation.

When the pup failed to respond to saline and dextrose subcutaneously and dextrimaltose with yeast and iron in water, a barium solution was given and radiographs were taken. Most of the barium had been

Drs. Goodloe and Schichor are general practitioners in Omaha, Neb.



Fig. 1.—This radiograph (dorsoventral view) of the pup shows the barium solution in the greatly distended esophagus. Notice the constriction of the esophagus at the cardia and the presence of barium in the stomach and, possibly, in the small intestine.

retained in the esophagus, which was several times larger than normal. A small amount of the solution had apparently passed into the stomach and on into the small intestine.

The diagnosis was megaesophagus.

Repair of Ruptured Bladder in a Cow

Two days after a Shorthorn cow, 21½ years old, had calved unobserved, she was uncomfortable and somewhat bloated. When examined eight days after calving, her temperature was 101 F., her pulse was strong (90), and the mucous membranes were normal, but the abdomen was distended and percussion indicated free fluid. Upon paracentesis, in the sublumbar fossa, a clear, colorless fluid with a slight odor of urine flowed freely. An index finger inserted through the urethra identified a 2-inch tear in the dorsal midline of the fundus of the bladder.

The cow was given 20 cc. of 2 per cent procaine hydrochloride epidurally while standing, a lubricated index finger was inserted through the urethra and into the wound and, with gentle traction, the bladder was everted through the urethra until it was visible in the vulva. It was held with two pairs of large tissue forceps, and an assistant manually dilated the vulva while four No. 3 chromic catgut horizontal mattress sutures were placed to close the wound and firmly oppose the serous surfaces. The bladder was then returned to its normal position. A ½-inch sterilized rubber tube was inserted through a 2-inch incision low in the left flank, allowing at least 20 gal. of fluid to escape.

The next day, drainage had stopped and the cow was seen to micturate normally a pint of clear concentrated urine, but she suddenly collapsed and died the following day. However, the ease with which the bladder was everted through the urethra and repaired suggests a novel procedure for surgical intervention should the occasion arise.—*Vet. Rec.*, Dec. 29, 1956.

Fate of Spermatozoa.—Spermatozoa which did not participate in fertilizing an ovum had been reported as capable of penetrating the uterine wall; however, this was not confirmed. It appears that cells of the phagocytic type are responsible for their disappearance.—*Nature*, Jan. 19, 1957.

Clinical Data

Laboratory and Field Studies with Furazolidone in the Prevention and Treatment of Avian Infectious Synovitis

A. S. COSGROVE, D.V.M.

Millsboro, Delaware

THE CAUSE of avian infectious synovitis has been ascribed to a specific microorganism.¹ In chickens, this agent produced subacute and chronic systemic disease, characterized by purulent and caseous inflammation of synovial tissue with marked synovitis, bursitis, and tendovaginitis. The organism appeared susceptible to some antibiotics. Liver and spleen suspensions, treated with 20,000 units of penicillin and 50 mg. of streptomycin per milliliter, failed to reproduce the disease when used for inoculation of susceptible birds.

An epidemic of this disease, characterized by an enlarged joint condition and a morbidity ranging from 2 to 75 per cent, was reported.² Field cases were complicated by a hemorrhagic condition or by respiratory disease. An infectious agent, grown in chicken embryos, produced lesions similar to the CRD (chronic respiratory disease) agent. Periarthritic fluid, as well as the egg-grown agent, produced typical lesions in inoculated chicks. A similar disease in chickens, 4 to 20 weeks of age or older, has been reported from the Delmarva (Delaware and eastern shore of Maryland) area where it may be increasing in prevalence.³ Greenish diarrhea and enlargement of hock joints, footpads, wing joints, and keel bursa were reported. Strains of the infectious agent were not susceptible to penicillin but some strains were susceptible *in ovo* to furazolidone,⁴ tetracycline, and oxytetracycline.⁵

In another experimental study, the infectious agent was inoculated directly into legs of birds kept on medicated feed. Furazolidone at 100 Gm. per ton of feed failed to prevent development of symptoms but was increasingly effective at 200- and 300-Gm. levels.⁴ One field report suggests that 50 Gm. of furazolidone per ton of feed may prevent synovitis in large flocks.⁵

Since infectious synovitis is of considerable economic importance to broiler producers, experiments were designed to determine the effectiveness of this drug

in the prevention and treatment of the disease.

EXPERIMENTAL AND FIELD STUDIES

In the two laboratory experiments, control and treated birds were inoculated with tissue suspensions obtained from several chickens with typical infectious synovitis. To collect the mucopurulent exudate, the leg and hock area was scrubbed with soap and disinfected with alcohol, the skin incised with a sterile scalpel, and the exudate aspirated with a sterile syringe. One cubic centimeter of aspirated fluid was diluted with 4 cc. of sterile saline solution, then 1,000 units of crystalline penicillin per cubic centimeter was added. This mixture was allowed to stand at room temperature for one hour and was then injected into the yolk sac of 7-day-old embryonating chicken eggs. Inoculated embryos were incubated at 37 C. for five to seven days. The eggs were candled daily. On the fifth day, the embryos began to die and all were dead on the seventh day after inoculation. The chorioallantoic fluid and the yolk were removed aseptically; these were combined and used as the inoculum. The dead embryos had enlarged spleens and numerous subcutaneous hemorrhages, especially in the ventral surface of the body and wings.

Experiment 1.—Experimentally, 100 White Cross chickens, 8 weeks old, were separated into four groups of 25 birds each and confined in batteries. Three groups (table 1) were inoculated with 0.5 cc. of infective material intramuscularly. One inoculated group served as controls and was fed nonmedicated mash. Another inoculated group received mash containing 100 Gm. of furazolidone per ton of feed (0.011%), beginning seven days before inoculation and continuing until the end of the experiment. The third inoculated group received nonmedicated feed initially, with 0.011 per cent furazolidone being added to the mash six days after inoculation when the first signs of synovitis appeared. The fourth group served as uninfected, untreated controls.

Experiment 2.—In a second laboratory

Dr. Cosgrove is a poultry practitioner in Millsboro, Del.
⁴Furozone, product of Eaton Laboratories, Norwich, N. Y.

TABLE 1—Prophylactic and Therapeutic Effect of Continuously Fed Furazolidone on Infectious Synovitis of Chickens

Group (25 birds each)	Inoculated	Medication (Gm./ton of feed)	Synovitis morbidity (No.)	(%)
1	Yes	None	17	68
2	Yes	100 Gm. starting 7 days before inoculation	0	0
3	Yes	100 Gm. starting with symptoms 6 days after inoculation	13	52
4	No	None	0	0

experiment (table 2), 180 White Cross chickens, 8 weeks old, were separated into 12 groups of 15 birds, each group in a battery. Duplicate groups were subjected to the same experimental procedure.

Groups 1 and 7 were inoculated as described in the first experiment but received no medication. They served as nonmedicated, inoculated controls.

Groups 2 and 8 were inoculated in the same manner and were fed 50 Gm. of furazolidone per ton of feed (0.0055%), starting seven days before inoculation, continuously until the end of the experiment.

All other groups were similarly inoculated but were not treated until the first signs of synovitis appeared. Groups 3 and 9 were then given mash containing 100 Gm. of furazolidone per ton (0.011%); groups 4 and 10 were fed 150 Gm. per ton (0.0165%); and groups 5 and 11 received 200 Gm. of the drug per ton (0.022%) of medicated mash.

Groups 6 and 12 served as environmental controls, receiving neither inoculation nor medication.

Field Studies.—Furazolidone was used to treat naturally-occurring synovitis in 11 flocks totaling 168,100 chickens (table 3) and one flock of 3,500 turkeys. The table also shows dosage and duration of treatment of the chickens which was continuous, except in flocks 4 and 11 which, after five

TABLE 2—Effect of Various Levels of Continuously Fed Furazolidone on Infectious Synovitis of Chickens

Group (15 birds each)	Inoculated	Medication (Gm./ton of feed)	Synovitis morbidity (No.)	(%)
1	Yes	None	10	67.0
2	Yes	50 Gm. 7 days before inoculation	3	20.0
3	Yes	100 Gm. at symptoms	7	46.6
4	Yes	150 Gm. at symptoms	3	20.0
5	Yes	200 Gm. at symptoms	2	13.0
6	No	None	0	0.0
7	Yes	None	11	73.3
8	Yes	50 Gm. 7 days before inoculation	2	13.3
9	Yes	100 Gm. at symptoms	9	60.0
10	Yes	150 Gm. at symptoms	4	26.6
11	Yes	200 Gm. at symptoms	2	13.0
12	No	None	0	0.0

and four days of treatment, respectively, were given nonmedicated feed for three days, followed by 100 Gm. of furazolidone per ton for another five and four days, respectively. One half of flock 1 was untreated and served as a control group.

In flock 6, synovitis was complicated by concurrent enteritis. Furazolidone at 100 Gm. per ton was the only drug given for both diseases. Flock 7 was also given 100 Gm. of oxytetracycline per ton of feed to suppress chronic respiratory disease (CRD) complications.

The flock of turkeys consisted of 3,500 Broad Breasted Bronze, 18 weeks old, which had been fed turkey-grower pellets supplemented with oats and corn. The morbidity was about 20 per cent and the weekly mortality from synovitis was approximately 4 to 6 birds. They were changed to a pelleted feed containing 100 Gm. of furazolidone per ton and soluble oxytetracycline (1 oz./5 gal.) was added to the drinking water in an attempt to improve feed intake. Treatment was continued for one week.

RESULTS

Laboratory Studies.—In the first laboratory experiment, 17 (68%) of the 25 in-

TABLE 3—Field Trials with Furazolidone for Treatment of Synovitis in 168,100 Chickens

Flock No.	1*	2	3	4	5	6	7	8	9	10	11
Total birds	1,250	1,250	5,000	5,000	15,000	7,000	1,500	40,000	29,000	15,500	6,100
Breed†	VT	VT	NH	WC	VTR	WC	WL	VT	LS	WC	WC
Age in weeks	9	9	10.5	11	8	9	100	9	8.5	8	5
Pretreatment morbidity (%)	25-30	25-30	10	10-15	5	2	10	10-15	20	10	8
Dosage in Gm./ton	—	200	100	100	100	100	100	150	150	100	100
Days of treatment	—	5	8	10†	7	4	10-12	5	5	5	5

*Control group. †VT—Van Tress broilers, VTR—Van Tress-Reds, LS—Lancaster Specials, NH—New Hampshire, WC—White Cross, WL—White Leghorns. ‡Treatment interrupted for three days at middle of the period.

oculated, untreated chickens developed lesions of synovitis. None of the 25 chickens which received 0.011 per cent of furazolidone in the mash, starting seven days before inoculation, developed the disease. In the group which received the same concentration of drugs when signs of the disease first appeared, *i.e.*, six days after inoculation, morbidity from synovitis was 13 (52%). The uninoculated and untreated group remained free from the disease throughout the experiment.

In the second experiment, synovitis developed in 10 (67%) and 11 (73.3%) of the 15 birds, respectively, in untreated, inoculated control groups 1 and 7. In groups 2 and 8, which were fed 50 Gm. of the drug per ton (0.0055%), starting seven days before inoculation, 3 (20%) and 2 (13.3%) of the 15 birds, respectively, developed synovitis. The morbidity in the groups of 15 birds each which were given medicated feed, starting at the first sign of the disease, was as follows: groups 3 and 9 (100 Gm./ton) starting five days after inoculation, 7 (46.6%) and 9 (60%) birds, respectively; groups 4 and 10 (150 Gm./ton) starting six days after inoculation, only 3 (20%) and 4 (26.6%) birds, respectively; and groups 5 and 11 (200 Gm./ton) starting six days after inoculation, only 2 (13%) birds were affected in each group.

The lesions encountered in affected birds consisted of enlarged keel bursae, enlarged spleens, and mucopurulent exudate in the hock joints and distal tendon sheaths of the legs. Anorexia, emaciation, and greenish diarrhea were present. The identity of the infectious avian synovitis agent was confirmed by isolation from inoculated birds.

Field Studies.—Results of field trials were in agreement with the laboratory data. In flock 1, after a few days of treatment, no new cases of synovitis developed, feed consumption returned rapidly to normal, birds in the early stages of the disease improved noticeably, and all medicated birds appeared healthier and more vigorous. In contrast, the disease continued to affect the untreated half of this flock, morbidity remaining high and feed consumption below normal. All other treated flocks showed signs of improvement within a few days of treatment. Thus, in flock 2, no new cases of synovitis appeared two days after furazolidone was first added to feed and no synovitis was discernible in

this flock after the five-day treatment. In flock 6, both synovitis and the concurrent enteritis were effectively subdued when the drug was fed. In flock 7, affected with both synovitis and CRD, the feed consumption doubled during the five-day treatment, mortality decreased, and the morbidity dropped from 10 to 15 per cent to 25 per cent. In flock 9, the poor head color of the affected Lancaster Specials rapidly returned to normal.

Only chickens which had been severely affected and deformed by advanced stages of synovitis before treatment failed to recover and had to be culled.

In the flock of turkeys, the morbidity decreased rapidly, feed consumption improved and mortalities ceased during the seven-day treatment. There was no recurrence.

DISCUSSION AND CONCLUSIONS

Preliminary tests by other workers had indicated that some strains of an agent causing avian infectious synovitis in the Delmarva area were susceptible to furazolidone.

Our experimental data indicate that a field strain of an infectious avian synovitis agent failed to infect susceptible chickens which were medicated with 100 Gm. of furazolidone per ton of total feed, starting seven days before inoculation but did produce some infection (13.3 and 20.0%) when only 50 Gm. per ton was fed prophylactically. At a level of 100 Gm. per ton, the drug seemed to have some therapeutic effect when fed at the first signs of the disease (52.0, 46.6, and 60.0%). When 150 to 200 Gm. of furazolidone per ton of feed was given therapeutically, the morbidity (13.0 to 26.6%) was about the same as when 50 Gm. per ton was given prophylactically. The therapeutic effect seemed to increase with the concentrations of the drug.

Results of our field tests indicate that infectious synovitis in poultry can be effectively controlled by furazolidone at a concentration of 100 to 200 Gm. per ton of feed.

SUMMARY

Experimental avian infectious synovitis was significantly suppressed by furazolidone in concentrations of 50 to 100 Gm. per ton of mash fed prophylactically. When

100, 150, or 200 Gm. of the drug per ton of feed was fed, starting when the first signs of the disease appeared, the therapeutic effect was directly proportional to the dosage used. In field trials in 11 flocks totaling 168,100 chickens and in one flock of 3,500 turkeys affected with synovitis, treatment with 100 to 200 Gm. of furazolidone per ton of feed (0.0055% to 0.011%) resulted in no new cases developing and a marked improvement in many infected birds. Concurrent enteritis in one flock also responded to the treatment.

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The tranquilizing drug, meprobamate, failed to quiet Leghorn chicks when used in an effort to reduce their excitability and thus increase their feeding efficiency. At 0.4 per cent of the ration or above, it slightly inhibited growth.—*New Jersey Agric., Sept.-Oct., 1956.*

Mode of Action of Penicillin.—The selective toxicity of penicillin for certain bacteria is due to its interference in a metabolic sequence in the biosynthesis of the cell wall, a sequence that is not found in animals cells. Crystal violet and perhaps other antibacterial substances may owe their activity to a somewhat similar effect. The bacterial wall, which is distinct from the cell membrane, gives shape to the organism.—*Science, Jan. 18, 1957.*

Penicillin-Induced Lysis.—Under a phase-contrast microscope, *Escherichia coli* rods, when affected by penicillin, produced central or terminal globular extrusion that increased in size as the cell wall emptied of cytoplasm. These globes, without protec-

tion against osmotic and mechanical disruption, disintegrated and released cytoplasmic material.—*Science, Jan. 18, 1957.*

PPLO Infection in Goats and Sheep

In 1953, on a farm in Sweden, an acute septicemia due to PPLO affected 21 of 41 goats and 1 of 3 sheep; 6 goats died. Four cows, 1 calf, and a horse were not affected. The animals showed a decreased appetite, fever, tenderness over the abdomen, depression, a crouching position, mucus-covered feces, and lactating animals showed agalactia and mastitis. Necropsy revealed ulcers and necrosis in the small intestine and colon, inflammation and necrosis in the systemic lymph nodes, acute septic splenitis, subepicardial hemorrhages, and acute necrotic-purulent pneumopnea. PPLO were isolated from the various organs and the disease was reproduced when cultured organisms were injected into normal animals.—*Collected papers, State Vet. Med. Inst., Stockholm, 1955.*

Parasites and Swine Erysipelas.—*Erysipelas rhusiopathiae* seems not to invade the host through lesions in the intestinal mucosa caused by strongyle parasites, but it may gain entrance through skin lesions caused by the larvae.—*Rec. méd. vét., 132, 585-593; abstr. in Vet. Bull., Jan., 1957.*

Correction—Atrophic Rhinitis

Two errors occurred in this item in the Jan. 15, 1957, JOURNAL, page 75. The item should read: "When rats were infected from material from infected swine, they did not develop lesions characteristic of atrophic rhinitis nor was there noticeable pus formation. However, when material from these rats was instilled into the nasal cavities of 12 young pigs, 8 developed typical signs of the disease in 15 to 45 days."

(The material sprayed into the nasal cavities of the remaining 24 young pigs mentioned in the original item, and which produced signs of the disease in 15 of the 24, in 24 to 75 days, had not been passed in the rat nose.)

Correction—Antibiotic Checks Enterotoxemia

The first sentence of this abstract in the Jan. 1, 1957, JOURNAL, page 45, is in error. It should read, "When 798 lambs (av. 61 lb.) were placed in four feeding groups, there were no deaths from enterotoxemia while they were being fed chlortetracycline, 10 mg. or more per pound of feed daily."

A Study of Tetracycline Dosage in Cattle Which Are Anaplasmosis Carriers

C. C. PEARSON, D.V.M.; W. E. BROCK, D.V.M., M.S.; I. O. KIEWER, A.B.

Pawhuska, Oklahoma

DESTRUCTION of the carrier state of anaplasmosis in cattle with large doses of chlortetracycline (aureomycin®) was reported in 1952.¹ A maximum dosage of 47.5 Gm., used in an adult cow was shown to have produced a period during which the disease was not transmitted, rather than eradication of the carrier state.² A carrier infection in an adult cow terminated after two, five-dose series of 50 mg. of chlortetracycline each, 33 days apart, but the infection remained after the same dosage in a second adult cow.³ Additional work⁴ on carrier infections showed that after giving either 5 mg. of oxytetracycline (tetracycline®) per pound of body weight daily for 14 days or 15 mg. of chlortetracycline per pound of body weight daily for 16 days, the infection was eliminated. However, the treatment of carrier infections by using either 2.5 mg. of chlortetracycline per pound daily for 20 days or 1 mg. of oxytetracycline per pound daily for 16 days was not successful.

Tetracycline has recently been shown⁵ to be as effective in the treatment of anaplasmosis as chlortetracycline and oxytetracycline.

It is recognized that the levels of antibiotics used are so high that it would make routine treatment of carriers economically impractical. However, the complement-fixation test for the identification of carrier cattle was improved to a practical level of accuracy during the time that information was accumulated on the destruction of carrier infections.

Thus, there is the fortunate combination of a method which aids in identifying carrier cattle and a treatment to terminate the infection. When valuable breeding stock are found to be infected, it would be practical, in many cases, to remove the infection from these animals, even though the cost would be prohibitive in feeder or grade cattle.

With this information available, it becomes important to establish definite levels of antibiotic dosage that the veterinarian may use with confidence, yet not wastefully, for the removal of anaplasmosis-carrier infection in cattle. The following experiment was devised to provide such information for the drug tetracycline.

METHODS

Thirty cattle which were carriers of anaplasmosis and whose carrier state was definitely determined by history of an attack of the disease, by subinoculation, or by repeated positive reaction to the complement-fixation test, were placed in three lots of 10 animals each. Each lot was then divided into two sublots of 5 animals each. The cattle in subplot 1 of each lot were treated intravenously and those in subplot 2 were treated intramuscularly.

The cattle in all lots received 5 mg. of tetracycline per pound of body weight daily during the treatment period. The animals in lot I were treated for five consecutive days; those in lot II were treated for five consecutive days, rested ten days, and treated for an additional five days; those in lot III were treated for ten consecutive days.

Success or failure of the treatments was determined by subinoculation of blood of treated animals into splenectomized calves. Furthermore, the complement-fixation test for anaplasmosis, as used by the Veterinary Research Station at Pawhuska,⁶ was performed on the treated animals. However, so little is known of the effects of antibiotic treatment on reaction of cattle to the complement-fixation test for anaplasmosis, it could not be used as a measure of the effectiveness of the treatment.

RESULTS

The experimental data and their interpretation are summarized (table 1). The total dosage represents the total amount of tetracycline each animal received at the rate of 5 mg. per pound of body weight daily for the various experimental periods

From the Veterinary Research Station, Pawhuska, Agricultural Experiment Station, School of Veterinary Medicine, Oklahoma A. & M. College, Stillwater.

The antibiotic, polyotic® and partial financial support of the research were furnished by the American Cyanamid Company, New York City, N. Y.

of time. The columns labeled "days" represent the interval from the time treatment was started to the day blood was drawn for subinoculation or for the complement-fixation test. If the subinoculated animals became infected with anaplasmosis or if the complement-fixation test was positive, the result is marked plus (+) in the respective column. If the carrier animal remained infected following treatment, as shown by subinoculation, the treatment result is marked plus.

After intravenous treatment with 5 mg. of tetracycline per pound of body weight daily for five days, only 2 of the 5 animals lost their carrier infection.

Treatment of cows with carrier infections, using 5 mg. per pound of body weight daily intramuscularly, was successful in eliminating anaplasmosis in 4 of the 5 cattle. Blood from the fifth animal (No. 32) was first inoculated into a susceptible calf on the fifty-ninth day following treatment in a pooled sample with blood from 3 other cattle. When the susceptible calf used as the recipient of the pooled sample became ill with anaplasmosis, blood from the other 3 cattle was inoculated into each of 3 splenectomized calves, respectively. Unfortunately, cow 32 was no longer available at the time of the second subinoculation. One of the other 3 cattle proved to be in-

fected at the time of the second subinoculation, making it impossible to determine whether or not cow 32 was infected at the time of the first subinoculation.

Of the cattle treated intravenously with 5 mg. of tetracycline per pound of body weight daily on the divided schedule of two five-day treatment periods with an intervening ten-day rest period, 1 of 5 remained an anaplasmosis carrier.

The carrier infections were terminated in all 5 cattle treated intramuscularly on the divided schedule.

In lot III, where treatment was given for ten consecutive days, anaplasmosis carrier infections terminated in all 10 cattle, regardless of the route of administration.

Three of the cattle (71, 38, and 708) continued to give a positive reaction to the complement-fixation test, although they were no longer infected with anaplasmosis as indicated by subinoculation.

In those animals from which subinoculations were made prior to 100 days following treatment, the subinoculation dose was 500 ml. of blood. This large dosage was necessary because transmission of the disease does not occur for 30 to 60 days with 5-ml. doses if the amounts of the tetracycline antibiotics used have not been sufficient to eliminate the carrier infections. Gates⁷ subsequently found that by using

TABLE I—Summary of Experimental Data and Results in Anaplasmosis-Carrier Cattle Treated with Tetracycline

Lot	Sublot	Animal	Weight (lb.)	Total dose (Gm.)	Subinoculation		C-F test		Treatment result
					Days	Result	Days	Result	
I	i.v.	94	1000	25.00	216	+	216	+	+
		71	1120	28.00	196	—	189	+	—
		470	1115	28.00	305	—	292	—	—
		147	1170	29.25	52	+	196	+	+
		404	1150	28.00	196	+	189	+	+
	i.m.	472	1430	37.50	80	—	93	—	—
		32*	1280	32.00	59	+	76	—	—
		38	1320	33.00	72	—	76	+	—
		17	930	23.25	260	—	260	—	—
		263	800	20.00	196	—	260	—	—
	II	196	950	47.50	260	—	260	—	—
		52	1415	70.00	260	—	260	—	—
		23	1220	61.00	260	—	260	—	—
		57	1040	52.00	260	+	260	+	+
		41	1125	56.00	260	—	260	—	—
	2i.m.	55	1070	53.50	306	—	204	—	—
		471	570	18.50	93	—	189	—	—
		446	1120	56.00	69	—	97	—	—
		3761	700	35.00	69	—	97	—	—
III	i.v.	3234	960	48.00	69	—	150	—	—
		708	1175	58.70	237	—	237	+	—
		502	1250	62.50	237	—	237	—	—
		718	1150	57.50	237	—	237	—	—
		523	1350	67.50	237	—	237	—	—
		349	1220	61.00	237	—	237	—	—
	2i.m.	3092	920	46.00	69	—	105	—	—
		3016	1050	52.25	69	—	105	—	—
		3205	950	47.50	69	—	105	—	—
		3104	990	49.50	69	—	105	—	—
		3089	930	46.50	69	—	105	—	—

*Eliminated from final evaluation of data due to insufficient information concerning carrier state following treatment.

140 ml. of packed erythrocytes he was able to produce transmission in ten days instead of 30 to 60 days. Similar results were obtained by the authors.* After 100 days, the subinoculation dose of blood used was 5 to 10 ml.; when subinoculated with a pooled sample, 5 to 10 ml. from each animal was given.

DISCUSSION

It is apparent from these data that the level of the antibiotic maintained in the animal is an important factor in the successful eradication of anaplasmosis-carrier infections. The divided treatment, as used in lot II, was less effective than the same total amount of drug given continuously, as in lot III. This was evident earlier when twice the total dosage of a similar drug was used in an experiment and failed to eliminate carrier infections when used as a divided treatment.³

Also, in lots I and II, intramuscular administration of the drug was more successful than intravenous administration, probably due to the prolonged time that the effective levels of the antibiotic were present.⁵

Since the complement-fixation test remained positive in 3 cattle after subinoculation had shown them to be free of anaplasmosis infection, there is indication that the complement-fixation test is not an accurate method for determining the success of carrier treatment with antibiotics. The significance of this phenomenon is not known. It is unlikely that these 3 cattle were infected with anaplasmosis after treatment since subinoculation into susceptible calves was made after the 30- to 60-day negative phases should have passed. These 3 animals were not checked in any way for increased resistance to reinfection.

The results of this experiment indicate that the most successful method of terminating anaplasmosis-carrier infection, would be to use 5 mg. of tetracycline per pound of body weight daily for ten days, intramuscularly. It is true, however, that

intramuscular treatments for only five days was equally successful. However, the five-day treatment is obviously on the borderline between success and failure when it is considered that in less than half of the animals treated intravenously for five days, anaplasmosis-carrier infection was eliminated.

SUMMARY

1) Thirty anaplasmosis-carrier cattle were treated with 5 mg. of tetracycline per pound of body weight daily: 10 were treated for five days; 10 for five days, rested ten days, and treated an additional five days; and 10 were treated for ten consecutive days. In each lot of 10 cattle, 5 were given the antibiotic intramuscularly and 5 intravenously.

2) Intramuscular treatment was successful in all lots. It was necessary to eliminate 1 animal from the experiment because it was impossible to determine her carrier status.²

3) Of those cattle treated intravenously, carrier infections terminated in 2 of the 5 cattle on the five-day treatment, 4 of the 5 cattle on the divided treatment, and 5 of the 5 cattle on the ten-day treatment.

4) Intramuscular injections of 5 mg. of tetracycline per pound of body weight daily for ten consecutive days is recommended for the elimination of anaplasmosis-carrier infections.

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*Two splenectomized carrier calves were treated with 2.5 mg. of chlortetracycline per pound of body weight. Blood from each treated calf was subinoculated into 2 susceptible splenectomized calves 26 days after treatment when the complement-fixation titer became negative; 1 of each pair received 0.5 ml. of blood, the other 300.0 ml. of blood. Neither of the calves which received 0.5 ml. of blood became infected with anaplasmosis during 63 days of observation but both calves receiving 300.0 ml. of blood became infected.

The Problem of Establishing the Dosage of Glucocorticoids for the Treatment of Diseased Cows with Ketosis

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AN ATTEMPT to establish the dosage of glucocorticoids for the treatment of ketosis in dairy cattle must deal with two distinct problems: (1) Ketosis is a nonspecific complication brought about by a variety of factors; and (2) the glucocorticoids are versatile pharmacological agents. Thus, a nonspecific condition is being treated with a nonspecific therapeutic agent.

CLINICAL CONSIDERATIONS

Ketosis is not necessarily associated with disease in dairy cows; positive reactions to the Ross test* are often apparent in the urine of normal animals.¹⁻³ While this test, as performed on the urine, is not a good index of blood ketone levels, it is, at present, the clinical test commonly available and must, therefore, serve as our yardstick. The presence of positive reactions to the Ross test in the urine ranges from normal to pathological. Nature recognizes no distinct borders—a fact of which the clinician is well aware. In the case of ketosis, it is not at all clear where the pathological process begins. Furthermore, direct determination of blood ketone levels, by more accurate analytical methods, reveals that there is no consistent relationship between elevated blood ketone levels and clinical signs of disease.^{3,4} Not every cow that exhibits ketonuria will necessarily develop a clinical condition.

The clinical signs upon which the field diagnosis of ketosis is made consist of diminished appetite and milk production, coincident with ketonuria; these three signs occur within eight weeks of parturition. The first two signs mentioned are not always apparent simultaneously and are nonspecific indications of disease but the appearance of one or both of them is usually the reason for the farmer calling a veterinarian. Ketonuria is not necessarily associated with pathological processes.

These three signs are far from a satisfactory diagnostic criterion. They may occur in common with such dissimilar diseases as hyperkeratosis,⁵ three-day sickness,⁶ and almost any one of many conditions to which the dairy cow is prone.

Internal medicine, as applied to the dairy cow, often poses difficult diagnostic problems. A cow that is off feed and has decreased in milk production, showing no other signs, is commonly considered to be suffering from indigestion. Should a similar postparturient case be associated with acetoneuria, the condition is diagnosed as ketosis. In both instances, the diagnosis is ambiguous.

Nutritional deficiencies have often been considered to be etiological factors leading to clinical ketosis.⁷⁻⁹ Theoretical considerations and actual knowledge of the metabolic processes leading to hypoglycemia and ketonemia fully justify this approach.

MECHANISMS OF KETOGENESIS

The study of blood ketones is essentially a study of liver function since the degree of ketonemia reveals information relative to the ratio of ketogenic versus glucogenic substances metabolized in that organ. This statement must be regarded with some reservations when dealing with ruminants since, in this species, foreign ketone bodies not formed in the liver may be absorbed.¹⁰⁻¹² Should the ketonemia coincide with hypoglycemia, there remains little doubt that the ketone bodies are of hepatic origin.¹³ Since hepatic oxidation of fatty acids depends on the availability of oxalacetate in the liver, a relative deficiency of this metabolite leads to ketonemia, which reflects an alternate pathway for fat metabolism. Oxalacetate is a product of glucose or of glucogenic substances, and hypoglycemia indicates a deficiency of oxalacetate. Thus, the ketonemic-hypoglycemic complex indicates that the ratio of ketogenic versus glucogenic substances metabolized in the liver favors the ketogenic metabolites. This shift in ratio may be brought about by decreased intake of glu-

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*A modification of Rocher's sodium nitroprusside test for ketones.

cogenic substances, increased requirements for glucogenic substances, or by increased intake of ketogenic fatty acids and mobilization of depot fat.

Research¹⁴⁻¹⁶ indicates that increased intake of butyric acid may increase carbohydrate requirements in ruminants. Ketonemia, following the administration of butyric acid, was associated with a hypoglycemia.

Sugar requirements of the dairy cow increase with milk production and this leads to a relative increase in absorbed ketogenic fatty acids metabolized in the liver. The rumen flora convert glucose to fatty acids in the following proportions on an average: propionic 19 per cent, butyric 14 per cent, acetic 67 per cent.¹⁷ Current knowledge suggests that the animal absorbs very little, if any, glucose from the rumen under normal conditions. Of these absorbed fatty acids, only propionic is glucogenic and, thus, may be regarded as an oxalacetate precursor. The mammary gland of the lactating cow is competing with the liver for oxalacetate precursors, leading to an increased ratio of absorbed ketogenic to glucogenic fatty acids metabolized in the liver. High milk production is well recognized as a significant predisposing factor to bovine ketosis. It may be regarded as lowering the threshold to ketosis. This threshold will be further reduced by insufficient feed intake, due either to underfeeding or disturbances of the rumen flora.

A high intake of butyric acid, which may occur with certain types of grass silage, must be considered as a further predisposing factor. Varying the diet affects the production of ketogenic fatty acids produced in the rumen.¹⁸ Most diseases will increase energy requirements and, at the same time, decrease intake of glucogenic substances. The possible combinations of these and other factors are too numerous to predict, yet the well-bred cow will continue to produce milk in the face of metabolic adversity. Should the sum of stress factors reach significant proportions, the hypothalamic-pituitary-adrenal axis is caused to release adrenocortical hormones, which in turn promote glucogenesis from protein and ketogenesis from depot fats. Shaw¹⁹ considers bovine ketosis to result from adrenocortical deficiency. It has been shown²⁰ that this is extremely unlikely since it is not probable that the mobilization of depot fats could occur in the

absence of the adrenocortical secretions. Ketogenesis following starvation is relied upon as an index of adrenocortical function and is used as a diagnostic tool in human medicine.²¹ It has been demonstrated²² that blood levels of hydrocortisone are higher in ketotic than in normal cows.

These considerations lead us to the conclusion that the ketonemic-hypoglycemic complex is a nonspecific result of a variety of conditions or sum of conditions that present the liver with a metabolic mixture that favors ketogenesis.

SOME ACTIONS OF GLUCOCORTICOIDS

The accepted rationale for using glucocorticoids in the treatment of dairy cows exhibiting ketosis is based on the glucogenic activity of these agents.¹⁹ Yet, the glucocorticoids have other characteristics which may contribute to the recovery of the sick animal. They are known to produce a feeling of well-being and stimulate appetite. While it is difficult to evaluate euphoria in the cow, there is increasing evidence that the appetite is stimulated. This factor alone is significant when dealing with any disease and particularly where a nutritional deficiency may cause or enhance the condition. The anti-inflammatory action of the glucocorticoids may relieve pain due to acute and sometimes chronic inflammations, thus further contributing to the feeling of well-being of the animal. Experiments²³ with glucocorticoids in severe cases of pneumonia in sheep and cattle indicated that, following treatment, there was a marked improvement in the animals' attitude, including those that died.

All of these characteristics of the glucocorticoids are nonspecific; they do not remove the cause of disease but provide the animal with a transient stimulation. Should the factor precipitating ketosis also be transient in nature, the animal will need no further therapy. In cases where the precipitating factor is persistent, the animal will continue to relapse following successive glucocorticoid therapy.

SELECTION OF GLUCOCORTICOID DOSAGE

The dosage range recommended for ketosis therapy by different workers for different glucocorticoids is wide. The minimal dosages suggested are, in some instances, only 25 per cent of the maximal. This can

be expected when a nonspecific sign is elevated to the dignity of a disease and then treated with an extremely versatile nonspecific therapeutic agent. The problem that faces the practitioner is how to determine in advance the minimal dosage for a given animal. In those cases in which the precipitating factor is recognized and treated specifically at the same time that the glucocorticoid is administered, the use of smaller doses of glucocorticoids will be feasible. This is essentially a diagnostic problem.

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- Sensitivity of Bacillus Anthracis.*—The sensitivity ratings of 44 strains of *Bacillus anthracis* were as follows: for streptomycin, chlortetracycline (aureomycin), and oxytetracycline (terramycin)—100 per cent; for penicillin—97.7 per cent; for erythromycin—95.4 per cent; and for chloromycetin—90.9 per cent. Sulfonamides were relatively ineffective although they did delay bacterial growth.—*Nord. Vet.-med.*, Nov., 1956.

Symposium on Poisoning—Part 2

Poisoning in animals was the subject discussed at the sixth annual seminar of the American College of Veterinary Pathologists, held in Chicago on Nov. 26, 1955. The first part of this discussion (cases 1-8) was published in the Jan. 1, 1957, JOURNAL, pp. 12-22. Part 3 will be published in a subsequent issue.

CASE 9—ACUTE ETHYLENE GLYCOL POISONING IN A CAT—William J. Hadlow, D. V. M.

History.—A kitten, 6 weeks old, had been confined in a garage where an open bucket containing ethylene glycol (prestone solution), drained from an automobile radiator, was stored. The cat appeared normal until two days before examination. The initial signs of illness had been weakness of the hindlegs, apathy, and drowsiness. Paralysis was not evident, the temperature was 98.6 F., and the leukocyte count was 33,500 per cubic centimeter (mostly neutrophils). Euthanasia was performed.

Comments (Dr. Hadlow).—Microscopically, the kidneys show no signs of inflam-

mation, the most prominent change being large, sheaflike arrangements of brilliantly refractile crystals in some of the tubules in the cortex (fig. 16). The straight tubules are somewhat dilated. Most cortical tubules are not appreciably altered but a few show hydropic degeneration. Where crystals are present, they tend to fill the tubules, causing necrosis and disappearance of the epithelium due to compression.

The crystals are irregularly stained black by Von Kossa's silver method for calcium but are not stained by routine methods. They are soluble in dilute hydrochloric acid but not in dilute acetic acid. They are probably calcium oxalate crystals.

The most apparent microscopic changes in the cerebrum are hypertrophy and proliferation of the endothelial cells of the smaller arterioles and the capillaries in the cortex. Scattered, small, cellular nodules are thought to be remnants of vessels occluded by extreme endothelial hyperplasia. A few refractile crystals, similar to those seen in the kidneys, are found in these vessels and in the perivascular spaces. Some areas show proliferation of mononuclear cells in the adventitia and perivascular spaces, along with neutrophils in the

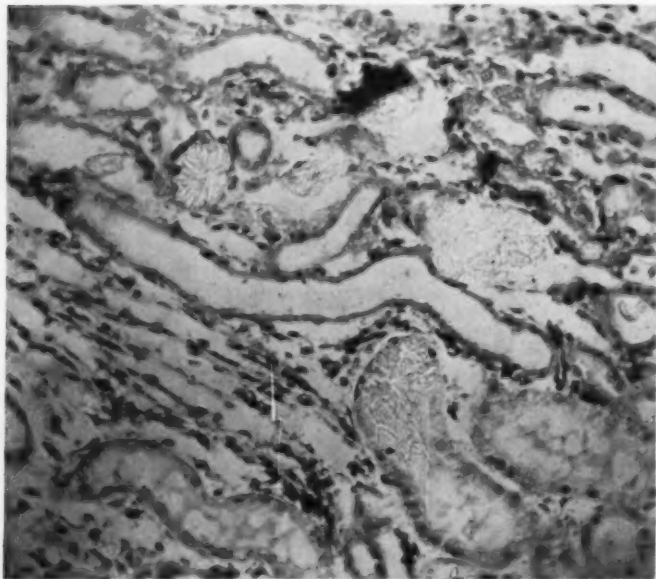


Fig. 16—Histological section of kidney of a kitten (case 9) showing crystals in tubules. The crystals tend to fill the tubules and cause compression, necrosis, and disappearance of the epithelial lining (arrow). x 210.

—A.F.I.P.—55-21568

latter. The leptomeninges show irregularly distributed, scanty lymphocytic infiltrations. Neuronal changes are difficult to assess because the whole brain was fixed by immersion.

Calcium oxalate crystals may occur irregularly in the tissues in poisoning,⁵ with oxalic acid, oxalates, polyglycol ester, and ethylene glycol; similar crystals have been found in children with an obscure metabolic disease recently termed "oxalosis."¹¹ Such crystals are not found in poisoning with propylene or diethylene glycol, dioxane, various compound glycol ethers, or any of the common alcohols.

The disturbed metabolic status in ethylene glycol poisoning may be related to widespread capillary damage,² chiefly due to the oxalates.⁸ Brain damage may be the principal cause of death.⁶ The fatal dose of ethylene glycerol for cats may be 1.5 ml. per kilogram (3 ml. of this antifreeze in 50% sol.).³ Leukocytosis has been observed in ethylene glycol poisoning in man.

Diagnosis.—Acute ethylene glycol poisoning in a cat.

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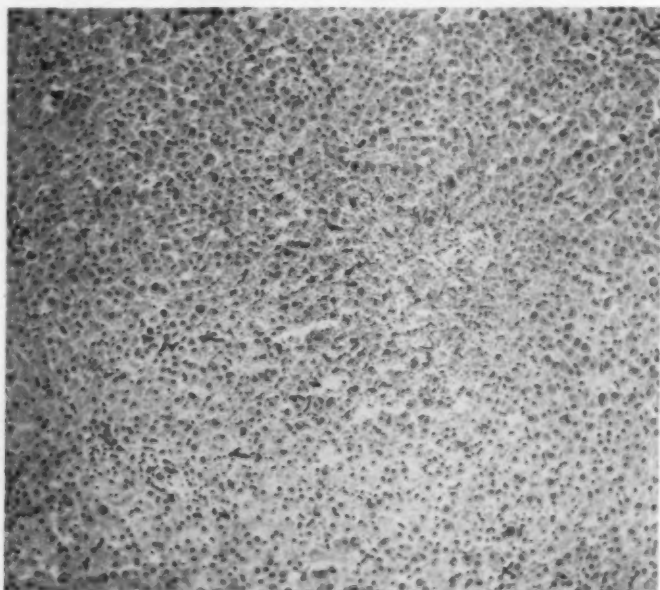
CASE 10—ACUTE TETRACHLOROETHYLENE POISONING IN A HEIFER—Kenneth McEntee, D. V. M.

History.—Six emaciated dairy heifers, 8 months old, were each drenched for stomach worms with 10 cc. of tetrachloroethylene in 10 cc. of mineral oil. The heifers refused food the night after treatment. The next morning, 2 were dead, 1 was unable to rise, and the other 3 were standing but showed intoxication and refused food. The dead heifers were submitted for necropsy and microscopic sections were made.

Comments (Dr. C. G. Rickard, N. Y.).—The microscopic lesions were primarily in the liver (fig. 17) where there was exten-

Case 10 was presented by Dr. Kenneth McEntee, Ithaca, N. Y.

Fig. 17—Microscopic sections of liver of a heifer (case 10) showing extensive necrosis of the hepatic cells as the result of tetrachloroethylene poisoning. H & E stain; x 210.



sive centrolobular necrosis and widespread disassociation of liver cell cords. This disassociation or "individualization" of liver cells is one of the steps toward necrosis.

Diagnosis.—Acute necrosis of the liver as the result of tetrachloroethylene poisoning in a heifer.

Discussion (W. H. Riser, III.).—Similar intoxication has occurred in anemic debilitated pups when wormed with tetrachloroethylene. This is less apt to occur if the pups are fortified in advance of treatment by feeding large doses of glucose.

CASE 11—VITAMIN D (VIOSTEROL) POISONING IN A COW, FROM A STUDY ON THE PREVENTION OF PARTURIENT PARESIS—*Clarence R. Cole, D.V.M., Ph.D.; D. M. Chamberlain, D.V.M., M.S.; J. W. Hibbs, Ph.D.; W. D. Pounden, D.V.M., Ph.D.; C. R. Smith, D.V.M.*

History.—A Jersey cow, 6 years old, was given 30 million units of vitamin D (vios-terol) orally daily for 20 days before and one day after calving to study its toxic effect. By the eleventh day, there were signs of anorexia, reduced rumination, depression, and weight loss. Electrocardiac

studies revealed arrhythmia, premature ventricular systole, and bradycardia.

The cow was killed for necropsy on the fourth day after calving. Cut sections of the kidney showed opaque streaks radiating from the papillae to the cortex. The urine was opaque and the bladder mucosa was covered with 1 cm. of white granular material. In both atria, the endocardium was roughened by white subendocardial deposits. The aorta, common carotid (fig. 18), iliac, pulmonary, and other large arteries were inelastic and flattened. When cut, they produced a grating sound due to white granular and homogeneous deposits in the media (fig. 19, 20). The intima glistened but was transversely corrugated by subintimal ridges of deposits. Many veins were similarly but less markedly affected.

Comments (C. R. Cole, Ohio).—The lesions in the heart, arteries, and veins are similar. The lumen of the common carotid artery is irregular and oval rather than circular. The intima is thickened at several points, with fibrous connective tissue up to 240 μ thick separating it from the internal elastic membrane (fig. 20).



Fig. 18 (Top)—Common carotid artery of the cow (case 11) showing flattened and grooved exterior surface. Bottom—Common carotid artery opened to show rough, corrugated internal surface.

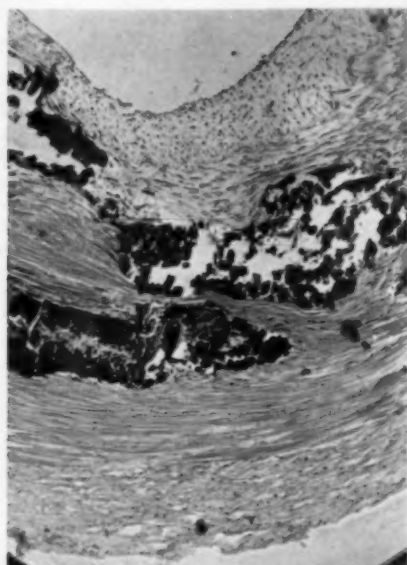


Fig. 19—Cross section of the common carotid artery of the cow (case 11). Note thickened intima and calcification of the subjacent media. Aldehydefuchsin and H & E stain; x 80.

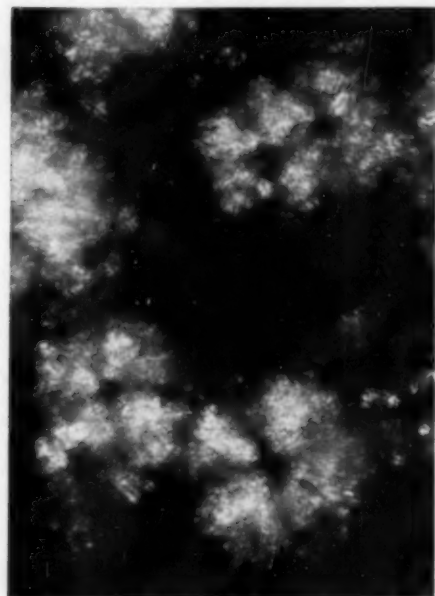


Fig. 20—Cholesterol crystals from material obtained by microdissection from the media of the cow's carotid artery (case 11). Note the anisotropic crystals and Maltese cross formations (polariscopy, crossed Nicol prisms). Unstained; x 720.

A wide irregular band of basophilic, amorphous, and granular material is seen in the media. The deposits were found to contain calcium phosphate and calcium oxalate crystals, as well as cholesterol esters, fatty acids, and neutral fat. Degenerated elastic tissue and necrotic smooth muscle were found within the calcareous foci. The internal elastic lamina was uninterrupted, although calcification occurred in the subjacent media.

Assay of the parathyroid glands showed definite depression of the parahormone content. The parahormone activity of the parathyroids from the cow fed vitamin D was one thirtieth as great as that of normal pregnant cows of the same breed.

Diagnosis.—Calcification of tissues in the heart, large vessels, and kidneys of a cow, caused by excessive feeding of vitamin D (viosterol).

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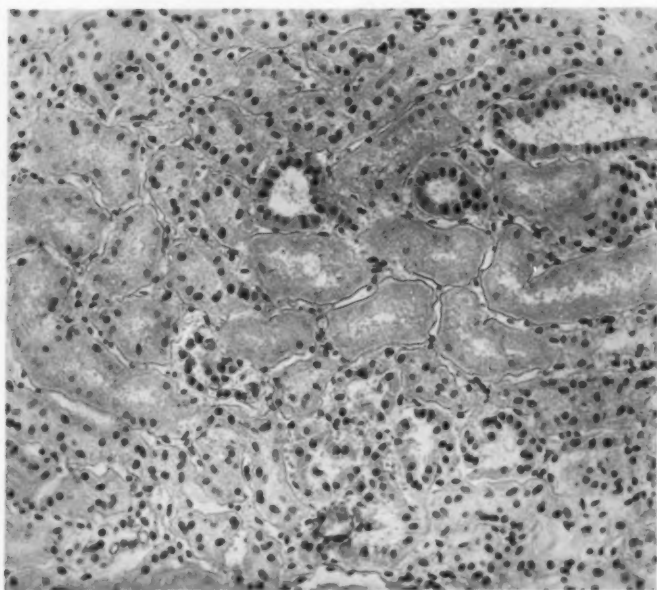
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CASE 12.—POISONING OF CATTLE BY PENTACHLOROPHENOL IN KEROSENE—G. R. Spencer, D.V.M., Ph.D.

History.—A Hereford cow, 5 years old, was 1 of 2 that had died within 24 hours after having been observed grazing in a recently harvested wheat field into which they had been turned two weeks previously. The drinking water was at a considerable distance but an open barrel containing pentachlorophenol (5%) in kerosene was in the field.

At necropsy, eight hours after death, there was a mild reddening of the mucosa of the rumen, abomasum, and small intestines. The rumen contents had a peculiar oily odor with little evidence of fermentation. The surface of the liver showed numerous pale areas, and the cortex of the kidneys were also pale. There were scattered petechiae and ecchymoses on the tracheal mucosa, and ulcers on the mucosa

Case 12 was presented by Dr. G. R. Spencer, Pullman, Wash.



—A.F.I.P.—55-21666

Fig. 21—Section of cow's kidney (case 12) showing extensive necrosis, especially in certain convoluted tubules which are surrounded by an unusually prominent basement membrane. H & E stain; x 210.

of the pharynx and larynx. Even the skeletal muscles, which were pale, seemed to have an oily odor.

Comments (Moderator Smith).—The microscopic lesions are not much different than those seen in tetrachloroethylene and carbon tetrachloride poisoning. The liver and kidneys show the greatest damage, an extensive necrosis, especially in the centrolubular areas in the liver and in the convoluted tubules of the kidney (fig. 21).

Diagnosis.—Poisoning in a cow caused by the consumption of pentachlorophenol (5%) in kerosene.

Discussion (G. R. Spencer, Wash.).—Cattle will drink almost any fluid, even kerosene, when they are thirsty. Both kerosene and pentachlorophenol are toxic. Pentachlorophenol is a tissue fixative and will prevent fermentation in the rumen.

CASE 13—POISONING IN SWINE CAUSED FROM FEEDING COTTONSEED OIL CONTAINING GOSSYPOL.—Hilton A. Smith, D.V.M., Ph.D.

History.—Swine died of gossypol poisoning when their ration included cottonseed meal containing gossypol, a hydrocarbon used in the extraction of cottonseed oil.

Case 13 was presented by Dr. Hilton A. Smith, College Station, Texas.

Death may occur in three to eight weeks when the ration contains 0.02 to 0.03 per cent of gossypol. Characteristic signs of this poisoning include generalized weakness, dyspnea, and edema. Characteristic lesions include generalized edema and congestion, severe myocarditis, and hepatitis.

Comments (Moderator Smith).—The generalized edema and congestion is probably due to heart failure. The cells of the myocardium show vacuolation, loss of nuclei, and compensatory hypertrophy. The necrosis in the liver (fig. 22) may be primarily from gossypol but some may be secondary to the anoxemia associated with the heart failure.

Diagnosis.—Acute heart failure of swine, with edema and hepatic necrosis, due to gossypol poisoning.

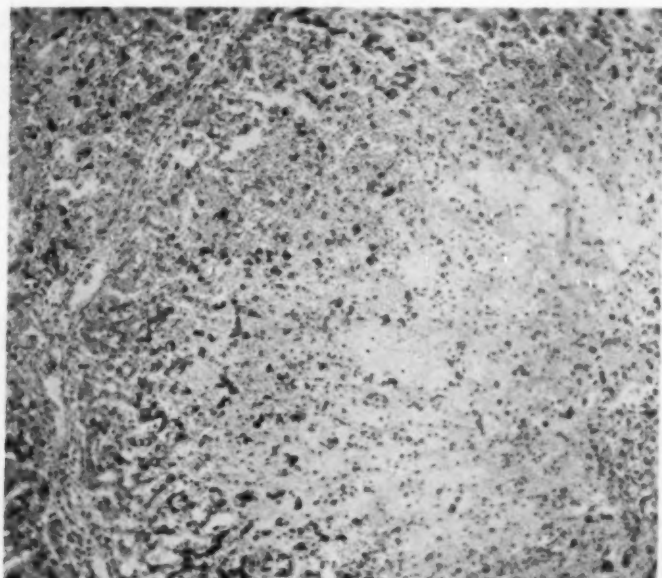
Discussion (Dr. J. H. Rust, Ill.).—Toxic cottonseed meal fed to hens causes the yolks of their eggs to break down, giving them the appearance of a "spoiled" egg.

CASE 14—STILBESTROL POISONING IN MICE—W. J. Hadlow, D.V.M.

History.—In a previously healthy breeding colony of white mice, about 90 per cent

Case 14 was presented by Dr. W. J. Hadlow, Hamilton, Mont.

Fig. 22—Section of liver of a pig (case 13) showing extensive necrosis as the result of gossypol poisoning. x 100.



—A.F.I.P.—55-21668

of the males of breeding age (55 to 60 days old) suddenly developed scrotal hernias (fig. 23). The affected males otherwise appeared normal except for a decreased libido in some. Concurrently, the number of pregnancies in the 9,000 breeding females rapidly declined from a normal of 900 to 1,000 to 20 per week. There was also a decrease in the size of the litters and many young were stillborn. There had been no recent change apparent in feeding or management procedures. The section submitted is from the testicle of an adult mouse with a scrotal hernia.

Comments—Microscopic Findings (Dr. Hadlow).—The section of mouse testis shows degenerative changes in the germinal epithelium (fig. 24), with progressive disappearance of the spermatogenic elements beginning with the late stages of spermatogenesis. Some tubules contain only the remnants of degenerating sperm; in others, the spermatids are pyknotic and clumped; those with more advanced changes show numerous multinucleated giant cells which represent syncytia of spermatid and spermatocyte nuclei; others show vacuolization, desquamation, and apparent dissolution of the spermatocytes; while the degenerative progress has pro-

gressed sufficiently far in some tubules, that a few spermatogonia and apparently intact Sertoli's cells are all that remain. There is no appreciable change in the size of the tubules, and the basement membranes do not appear to be altered. No changes are recognizable in the interstitial cells. A small amount of debris from the desquamated germinal epithelium has collected in portions of the epididymis but spermatozoa are absent. The microscopic findings are consistent with a diagnosis of testicular atrophy.

Testicular Atrophy.—Acquired atrophy of the testis has been associated with senility, prolonged hyperpyrexia, acute and wasting diseases, inanition, avitaminosis, diseases of the pituitary and hypothalamus, hypothyroidism, exposure to ionizing radiation, administration of estrogens, and certain local changes, e.g., testicular tumors, application of heat, and inflammation. (The causes of testicular atrophy in the dog and cat are listed.¹) The degenerative process is essentially the same from all causes except ionizing radiation, the late stages of spermatogenesis being the first affected.² In irradiated testis, the spermatogonia, the most radiosensitive, are the first cells affected.³

Vitamin E deficiency results in specific and irreversible damage to the male germinal epithelium in the rat⁸ and guinea pig¹⁰ but not in the rabbit⁷ or mouse.^{3,9} Vitamin E is required for the successful breeding by the female but not by the male mouse.

The sensitivity of mice to estrogens varies with the strain. Some strains do not develop testicular atrophy under conditions which produce atrophy in others. The interstitial cells may be unaffected, may

disappear completely or, in some strains of mice, may undergo hyperplasia and malignant transformation.²

All of the manifestations, including testicular atrophy, scrotal hernias, persistent estrus, and decreased reproductive performance, in the mice eventually were related to pelleted feed, which had been processed with mixing equipment previously used to prepare cattle supplement that contained diethylstilbestrol premix.^{4,5}

Diagnosis.—Atrophy of the testicles of

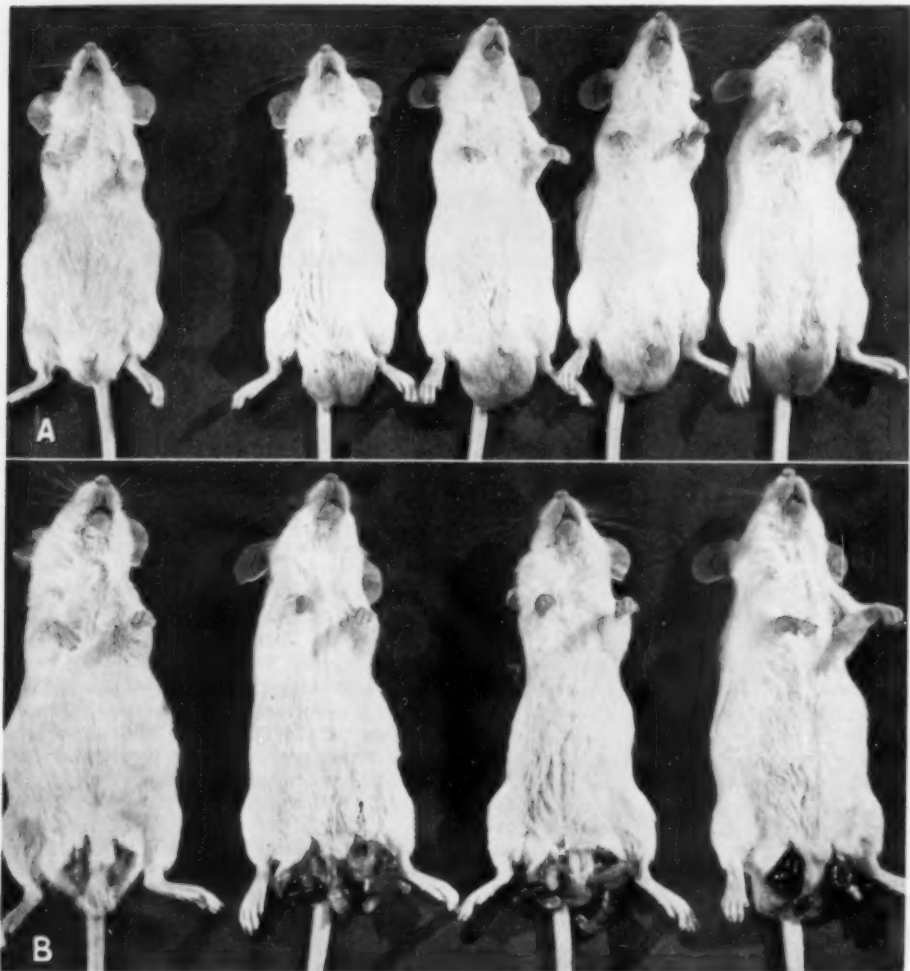
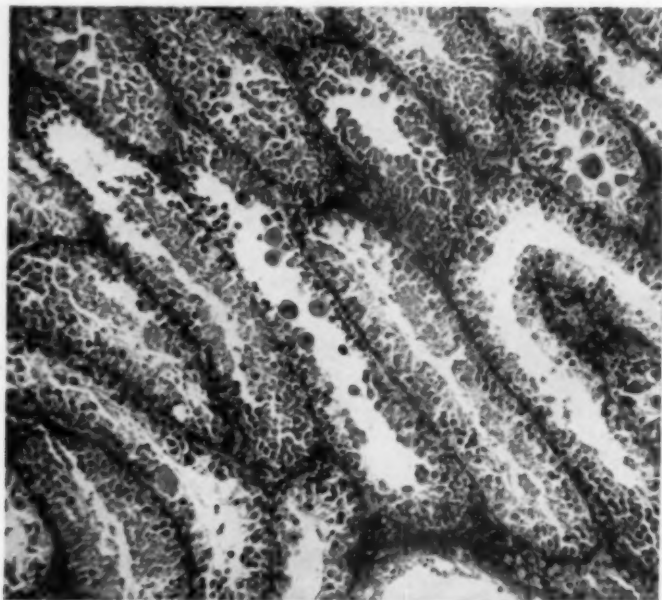


Fig. 23A—White mice (case 14) with scrotal hernias induced by contamination of their feed by diethylstilbestrol. The mouse on the left is normal. (B) The 4 herniated mice shown in (A) with the scrotum incised showing herniated intestines.

Fig. 24—Microscopic section from the testes of a white mouse (case 14) showing degenerative changes in spermatogenic elements resulting in atrophy. H & E stain; x 100.



mice, induced by contamination of the feed with diethylstilbestrol.

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Testis in Vitamin E Deficient Guinea Pigs. *Am. J. Path.*, 20, (1944): 239-245.

CASE 15—PITCH POISONING IN SWINE—J. H. Sautter, D.V.M., and R. Fenstermacher, D.V.M.

History.—A herd of 15 shoats was pastured in a field which had been used formerly for shooting clay pigeons. Three of the pigs were found dead and 3 others were unable to walk.

Comments (Dr. Sautter).—On necropsy, the abdominal cavities contained about 100 ml. of straw-colored fluid, and the tissues in 2 pigs were slightly icteric. The livers were slightly enlarged and mottled. The centers of the lobules were shaded from a bright red to a pale yellow (fig. 25). No other lesions were observed.

Microscopic examination showed the centers of most lobules to contain erythrocytes, blood pigment, and debris, probably remnants of necrotic liver cells. The erythrocytes in some of the lobules were lysed. A small portion of the liver cords remained along the margins of the interlobular septums (fig. 26). The central vein was not recognizable.

Case 15 was presented by Drs. J. G. Sautter and R. Fenstermacher, St. Paul, Minn.

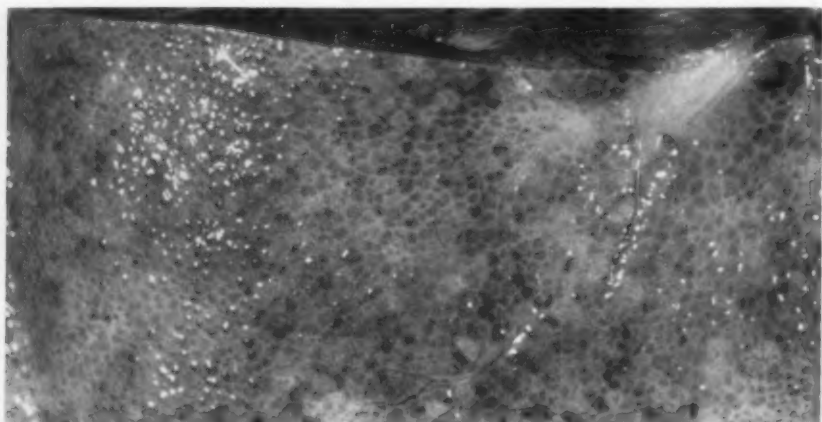


Fig. 25—Surface of liver of a pig (case 15) showing the mottling caused by hemorrhage and necrosis of lobules.

Diagnosis.—Acute hepatic necrosis of swine as a result of pitch poisoning.

Discussion (Dr. Sautter).—The findings in the

3 pigs were similar in every detail with previous descriptions of coal tar (pitch) poisoning in swine.¹

There are other sources of pitch, such as tarred

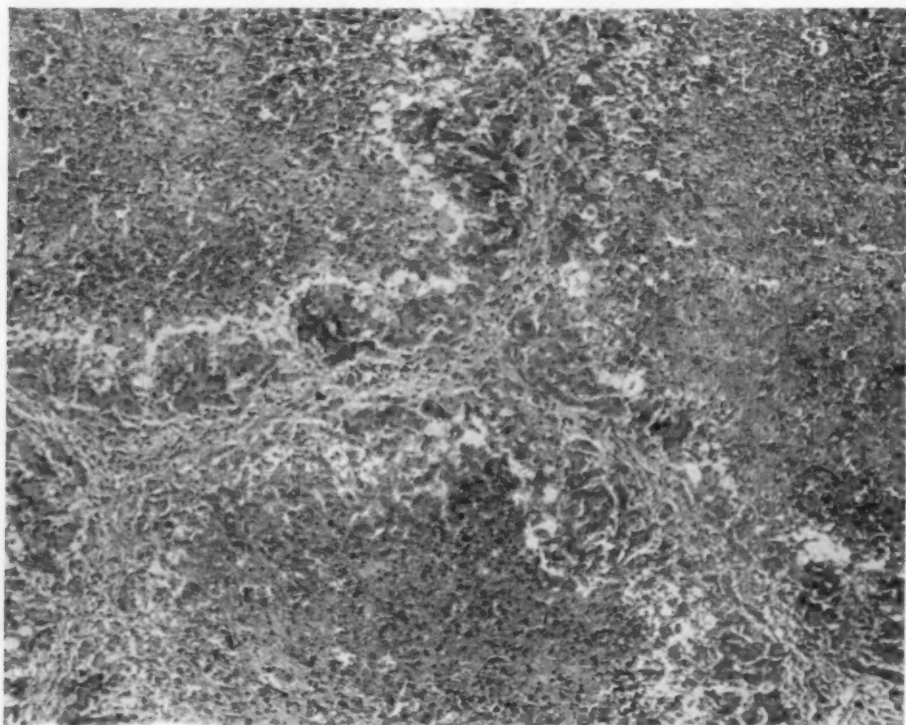
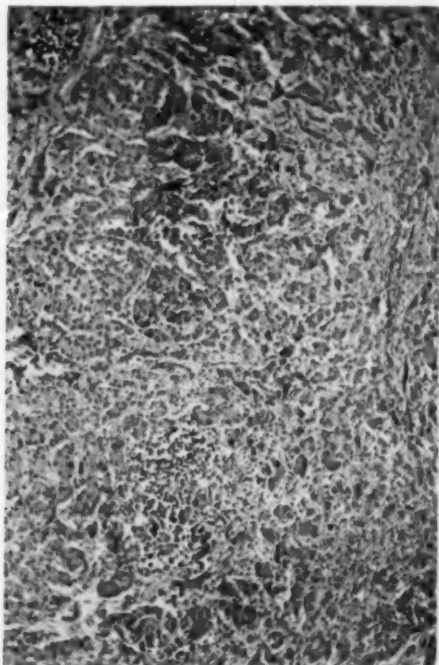
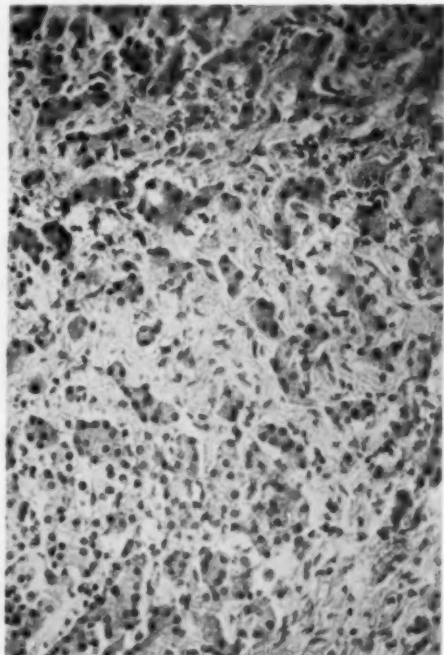


Fig. 26—Histological section of porcine liver (case 15) showing necrosis in the central portion of three lobules with normal cords remaining along portal septums. x 100.



—A.F.I.P.—55-21676

Fig. 27—Section of liver of a pig (case 16) showing the dense fibrosis characteristic of poisoning by Amsinckia. The fibrosis is primarily perlobular but extends into and subdivides the lobules. x 100.



—A.F.I.P.—55-21673

Fig. 28—Showing the lobular subdivision of the fibrous tissue of the pig's liver (case 16) with the tendency to isolate islands of hepatic tissue. x 210.

roofing materials, which are considered toxic to swine.

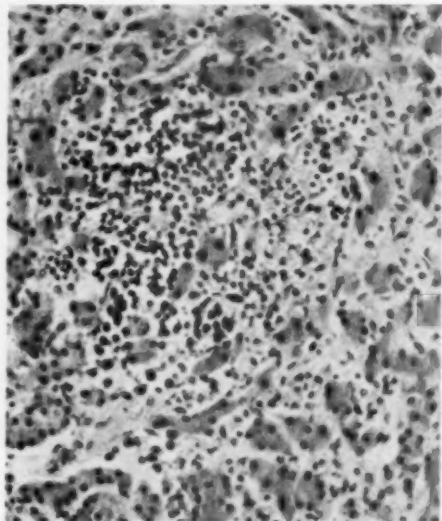
Dr. H. R. Seibold (Ala.).—In making a positive diagnosis, it should be remembered that low-protein and vitamin E-deficient rations produce liver necrosis and hemorrhage similar to the lesions seen in pitch poisoning.

Reference

¹Fenstermacher, R., Pomeroy, B. S., and Kernkamp, H. C. H.: Pitch Poisoning in Swine. Proc. U. S. Livestock San. A. (1945): 86-91.

CASE 16—TARWEED POISONING IN SWINE— Peter C. Kennedy, D.V.M., Ph.D.

History.—A crossbred, 140-lb. Duroc-Jersey was 1 of 18 barrows, in a herd of 65, that had died within two months. This herd had failed to gain normally and those that died had developed distended abdomens and, terminally, had subnormal temperatures. At necropsy, the carcass was pale and slightly icteric and the peritoneal cavity contained an estimated 5 liters of



—A.F.I.P.—55-21675

Fig. 29—Showing small inflammatory foci which appear to form around clusters of necrotic liver cells (case 16). x 210.

Case 16 was presented by Dr. Peter C. Kennedy, Davis, Calif.

fibrin-containing fluid. The liver was small, tan, firm, and cut with considerable resistance. An analysis of the mill screenings in their rations showed that tarweed seeds (*Amsinckia intermedia*) were present at the rate of 1 lb. per 450 lb. of screenings.

Comments (Dr. Kennedy).—The poisoning was chronic and dense fibrous tissue has replaced the hepatic cells. The fibrosis is primarily peribulbar but extends into and subdivides the lobules, thus isolating islands of hepatic tissue (fig. 27, 28). In certain areas, small inflammatory foci appear to have formed around clusters of necrotic liver cells (fig. 29).

Diagnosis.—Hepatic necrosis and cirrhosis of swine due to the ingestion of seeds of tarweed (*Amsinckia intermedia*).

Discussion (Dr. Leon Saunders, N. Y.).—The active principle of tarweed is not known.

Lt. Col. Chester A. Gleiser (Washington, D.C.).—The lesions of tarweed poisoning are similar to those of selenium poisoning.

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²McCulloch, E. C.: Hepatic Cirrhosis of Horses, Swine, and Cattle Due to Ingestion of Seeds of the Tarweed, *Amsinckia Intermedia*. *J.A.V.M.A.*, 96, (1940): 5.

Salt Poisoning in Swine

In a herd of garbage-fed swine in Israel, 3 pigs died suddenly and a fourth was ill. The 3 pigs had shown profuse salivation, fits which consisted of clonic contraction of muscle groups, unconsciousness, and death after several fits. The other pig was lying apathetically but, when stimulated, started running movements, tremors, and opisthotonoid spasms but no excessive salivation. At necropsy, only a slight congestion of the mucosa of the stomach was found.

Because of the prevalence of rabies, the head was sent to a laboratory but tests were negative. Histologically, the brain showed meningoencephalitis with perivascular and subpial infiltrations of eosinophilic granulocytes, which are pathognomonic for salt poisoning. No therapy was attempted. (In 1885, a German author reported the successful use of chloral hydrate; in 1938, a French author recommended calcium gluconate for supportive therapy of salt poisoning.)—*Refuah Vet.*, Sept., 1956.

Coal Tar (Pitch) Poisoning of Swine

This acute, highly fatal disease has been produced by feeding powdered clay pigeons or commercial coal tar (pitch) to swine.

Losses had been as high as 600 pigs in one year on a farm in Ontario where sows were placed in a large barn one week before farrowing and the pigs were raised there until weaned when 8 weeks old. The floor had been covered with asphalt to prevent moisture from penetrating through the cracks and, when the asphalt wore off, it was replaced by tar. The pigs were usually healthy until the fourth week when they became pale, listless, and depressed. Exercise caused distress, and anemia and icterus were common. Losses reached a peak when the pigs were 6 to 7 weeks old; none of the sows were affected.

At necropsy, anemia was extreme and the liver was markedly enlarged and showed a mosaic pattern. There was considerable straw-colored fluid in the peritoneal and pleural cavities, and frequently in the pericardial sac. The myocardium showed pale areas. Histologically, the liver had central zone degeneration, coagulation necrosis, hyperemia, and hemorrhage in many lobules; also, complete coagulation necrosis in some areas. No significant pathogenic organisms were found.—*W. T. Oliver and D. G. Ingram in Canad. J. Comp. Med.*, Feb., 1957.

[These pigs apparently were not affected until they were old enough to lick or chew on the tar. We previously reported a similar poisoning in pigs when the hoghouse floor was sprayed with a creosote-like waste product (see *JOURNAL*, March 1, 1956: p. 262).—*W.A.A.*]

Ovine Caseous Lymphadenitis

In natural infection with *Corynebacterium ovis*, the initial lesion is a suppurative skin wound followed, in 20 per cent of the sheep, by metastatic abscesses in the regional lymph nodes. Occasionally, the organism escapes the lymph node to form abscesses in visceral organs. The leukocytes which have phagocytized the organisms are apparently destroyed by a lipid substance which can be extracted from the organism. When this lipid is dissolved in certain fats and injected intradermally, it also produces a reaction, with hemorrhagic necrosis and a slough.—*Nature*, Sept. 29, 1956.

What Is Your Diagnosis?

Because of the interest in veterinary radiology, a case history and accompanying radiographs depicting a diagnostic problem are usually published in each issue of the JOURNAL.

Make your diagnosis from the picture below—then turn the page ▶

History.—A lobster fisherman presented a male Newfoundland, 12 years old, which was lame in the right foreleg. The metacarpal region was enlarged and sensitive. The dog cautiously bore weight on the limb.

The swelling had been noticed for a year or more. Its size and the dog's disability had changed little in that time.

A radiograph was taken (at right).



(Diagnosis and findings are reported on next page)

Here Is the Diagnosis

(Continued from preceding page)

Diagnosis.—Osteoclastoma (giant-cell tumor of the bone), probably a chondromyxoid fibroma.

Comments.—This tumor, as it is depicted radiologically, is of great interest, and it is regrettable that histological sections are not available for assistance in the diagnosis. The tumor apparently had not invaded the surrounding bones. Since it had been present for more than a year without a marked increase in size, the tumor must have followed a relatively benign course. The structure of the shaft of the fourth metacarpal bone had disappeared, indicating that the lesion was osteolytic (loss of calcium), and in the absence of infection the dissolution of the bone must have been osteoclastic in nature. (Osteoclasts are large multinucleated cells concerned in the destruction and absorption of bony tissue.)

Since the tumor involved the proximal articular area, it could have been designated as a chondromatous giant cell tumor except that it had extended the length of the bone, indicating that it also had myxoid and osteoclastoid traits. It is assumed that the growth is a histogenetic link between a chondroma and an osteoclastoma. In the experience of the reviewers,* chondromyxoid fibromas affect only long bones. Furthermore, the clean-cut osteolytic appearance of this tumor is similar to others which histologically proved to be chondromyxoid fibromas.

*Department of Pathology, Medical School, Northwestern University, Chicago, Ill.

This case was submitted by Dr. Sidney W. Stiles, Portland, Maine.

Rabies in Bats in Montana

After rabies virus was recovered from 1 bat caught in Ravalli County, Montana, in 1954, 127 live bats of seven species from the same area were examined in 1955. None of 121 bats collected while roosting were infected. However, rabies virus was isolated from 3 of the 6 bats that exhibited abnormal behavior. Their brain tissue suspensions produced a low titer of virus in the brains of inoculated mice.—*Pub. Health Rep., Jan., 1956.*

Neurilemmoma of the Canine Cecum.—A male retriever, 8 years old, had a recurrent illness over a period of 14 months marked by anorexia, mild fever, and occasional vomiting lasting four to ten days. The dog gradually developed a firm, nodular, slightly sensitive, palpable mass, just anterior to the pelvic cavity. A radiograph showed a neoplasm but the shadow was not dense. Upon laparotomy, at the midline, the mass was found adherent to the small and large intestines and the omentum. When the adhesions were separated, the nodular neoplasm was found to involve the end of the cecum. Forceps were applied,

the cecum was removed, the intestine closed with chromic catgut, the omentum sutured over the intestinal wound, and the operation completed. The dog made a complete recovery.

The mass (12.5 by 10.0 cm.) was hollow, somewhat necrotic, and had a repugnant odor. It was diagnosed as a probable neurilemmoma, a nerve sheath tumor composed of Schwann cells. It was nonepithelial and devoid of collagen, therefore, not a fibroma. No reference to a neoplasm of the cecum in the dog nor to a neurilemmoma involving the intestine was found.—*Vet. Rec., Dec. 29, 1956.*

Parasitic Esophageal Sarcomata in the Dog.—The three main pathological features of *Spirocerca lupi* infection in 2 dogs were: a chronic inflammatory reaction to the adult worms in the wall of the esophagus and in the mediastinal connective tissue; multiple small foreign body granulomas stimulated by the worm eggs in the mediastinum; and neoplasms in the wall of the esophagus. In 1 dog, there was an anaplastic fibrosarcoma; in the other, an osteogenic sarcoma.—*Vet. Bull., Dec., 1956.*

Plasma Cell Myelomatosis in a Dog

HANS MEIER, D.V.M.

Boston, Massachusetts

IN MAN, plasma cell myeloma constitutes, according to various series, 3 to 25 per cent of all primary bone tumors.⁶ In about one third of the cases, tumorous involvement is not restricted to the skeleton but affects other organs, predominantly the spleen and liver, by diffuse or localized infiltrations.⁶ It is a disease of old age and occurs more frequently in the male. The "pinched-out areas" and Bence-Jones proteinuria¹ are pathognomonic. Other findings may be hyperproteinemia, hypercalcemia, with or without metastatic calcification, and amyloidosis.¹

Plasma cell myeloma is one type of myeloma, other kinds are distinguished. Their histogenesis is explained when the reticulum cells are considered as their potential source. This, however, is not yet generally agreed to and the histogenesis of the different types is still debated.

In animals, myeloma has been recognized only in three instances; one of the reticulum cell type in an aged, castrated male cat² and the other two of the plasma cell type in old male dogs.^{2,4} The symptomatology in the cat was nonspecific: general decline followed by polydipsia and, later, stomatitis, persistent fever, anemia, and terminally mild jaundice. Blood examinations (fixed films and supravital preparations) revealed a leukopenia with the occurrence of reticulum cells and primitive erythroid cells, massive rouleaux formations, and fibrin depositions. Histologically, multiple tumors consisting of reticulum cells were found in the bone marrow and more diffuse processes in the lymph nodes, spleen, and liver; the cells in the latter were more mature and closer to plasma cells and small lymphocytes.

Both dogs were aged males. One dog² showed increasing pain and lameness of the left foreleg for 18 months; these symptoms were exerted by a tumorous enlargement of the upper third of the humerus. Radiographic examination, performed only after histological section revealed plasmacytoma, indicated the presence of an expanding tumor originating from within the

medullary cavity. It resembled that of a solitary myeloma in man. Grossly, the tumor was soft, a reddish gray, and filled the medullary cavity. The bone cortex was thinned, allowing it to cut easily, and the periosteum was thickened. Histologically, the myeloma was of the plasma cell type and metastatic myeloma lesions were absent in soft tissues. Because no microscopic studies of other bones were made, the tumor was classified as solitary plasmacytoma of the upper left humerus.

The other dog⁴ had a large, hard, insensitive swelling in the submaxillary region which extended into the intermandibular space and infiltrated into the neck. It was accompanied by high fever. The true nature of the lesion was recognized by means of a biopsy which revealed numerous plasma cells, lymphocytes, and myeloid cells and suggested plasmacytoma. Thus, blood and urine examinations were possible but were essentially negative; neither leukemia nor Bence-Jones proteinuria was present. Roentgenological examination of the bones did not reveal any pitting. Macroscopically, the intermaxillary tumor was the only lesion. It was soft, pink-gray, and expanded to the larynx and pharynx. Histologically, the neoplasm proved to be of predominantly plasma cell type with affection of soft tissues, liver, and spleen.

A third case of plasma cell myelomatosis in a dog is reported here. The case was taken from the files of the Angell Memorial Animal Hospital; the original diagnosis of the bone lesion was made by the Massachusetts State Tumor Diagnosis Service in 1950.

CASE REPORT

History and Clinical Findings.—A male Collie-type dog, 6 years old, was admitted to the clinics because he was unable to use his left hindleg which he had dragged for two weeks. Examination revealed a mucopurulent conjunctival discharge and apparently a new growth of the upper proximity of the tibia. The x-ray findings were erroneously interpreted as osteogenic sarcoma with pathological fracture, and euthanasia was performed.

Dr. Meier is acting pathologist, Angell Memorial Animal Hospital, Boston, Mass.



Fig. 1—A radiograph (lateral) of the dog's tibia disclosing osteolysis in multiple small spherical areas of medulla and cortex. There is moderate periosteal proliferation and new bone formation, but only in the vicinity of a pathological fracture (visible only on anterodorsal picture).

Radiographic Observations.—Films taken in the anterodorsal and lateral positions (fig. 1) showed osteolysis in multiple, small, nearly spherical areas in the medulla and in the cortex of the upper third of the tibia. The proliferation processes were slight with only moderate new bone formation and periosteal thickening. These were in the vicinity of a pathological fracture.

Necropsy.—The animal was in a fair nutritional state. Externally, the only lesion was an expansion of the proximal end of the left tibia, apparently due to edema of the musculature, hemorrhage, and callous formation due to a pathological fracture. The tumor (fig. 2) filled the medullary cavity and was soft and reddish. The color resulted from extensive hemorrhages. Examination of the viscera revealed that the liver and gallbladder were normal, the normal-sized spleen contained multiple small nodules with a dark red homogeneous cross section (fig. 3); the kidneys were scarred, and the left testicle contained a small soft red-brown mass. In the heart were several adult *Dirofilaria immitis*. Scattered throughout the lungs were nu-

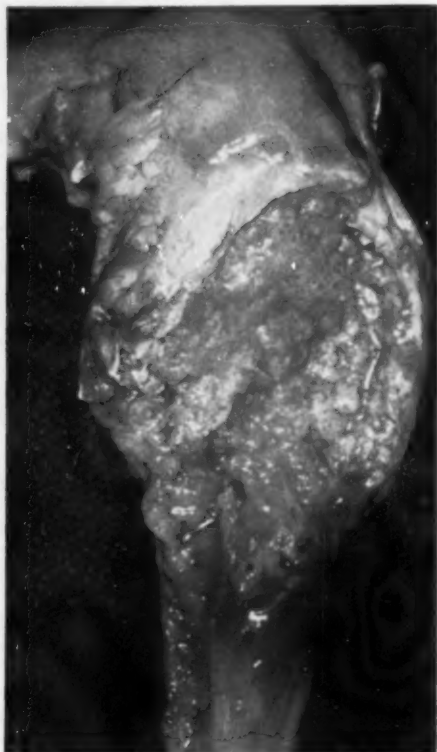


Fig. 2—The myeloma involved the proximal end of the tibia and filled the medullary cavity.

merous firm grayish masses which were also found in the slightly enlarged bronchial lymph nodes (fig. 4). All other lymph nodes appeared normal.

HISTOPATHOLOGY

Tissues were fixed in 10 per cent formalin and mercuric chloride and the sections stained with hematoxylin-eosin, Unna's polychrome methylene blue, toluidine blue, Congo Red, Giemsa's, and Masson's trichrome stain.

Tibia.—Tumor tissue almost filled the marrow cavity in the proximal third of the tibia; fat marrow persisted in a few areas. The tumor was mostly cellular, the neoplastic cells arranged both loosely and in compact masses. The cells, which had predominantly reticulum cell features, were huge and polyhedral in the clusters and round or oval in the less dense areas (fig. 5). The nuclei were either spherical or oval in the majority of the cells, and either eccentrically or centrally located (fig. 6). Most of these cells had a large central nucleolus. Mitotic figures in various divisional stages were common. The cytoplasm, which

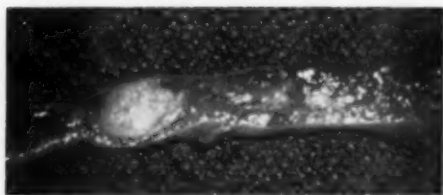


Fig. 3—The spleen contained multiple small nodules which proved histologically to be aggregations of lymphoid and plasma cells.

more or less conformed with the nuclear shape, was fairly abundant and amphophilic by hematoxylin-eosin stain and reddish by Masson's trichromatic stain. A divergence of a number of slightly-to-markedly different cell types seemed to be present. They all were variably smaller than the reticulum cells. The majority of them had small "spoked" nuclei, with some in typical eccentric position and a clear paranuclear zone, characteristic of mature plasma cells. The cytoplasm of some stained only faintly with hematoxylin-eosin, and was ballooned and contained a chunky granular material which had a pale bluish cast when stained with Unna's polychrome methylene blue. Cells with their nuclear morphology still related



Fig. 4—Numerous firm grayish masses (arrows), which involved the bronchial lymph nodes, were scattered throughout the lungs of a dog. Microscopically, they consisted of myeloma cells [intermediate between the reticulum and plasma cells].

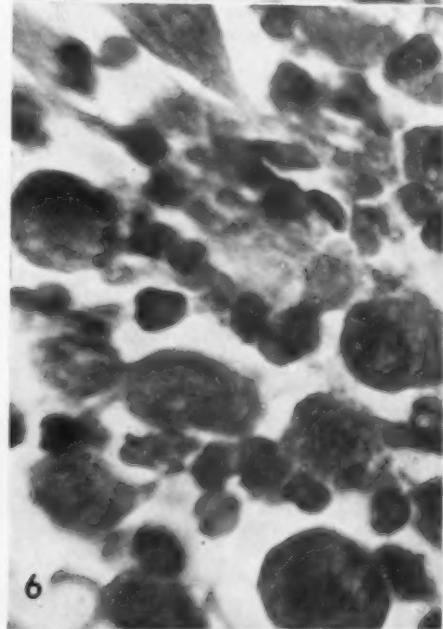
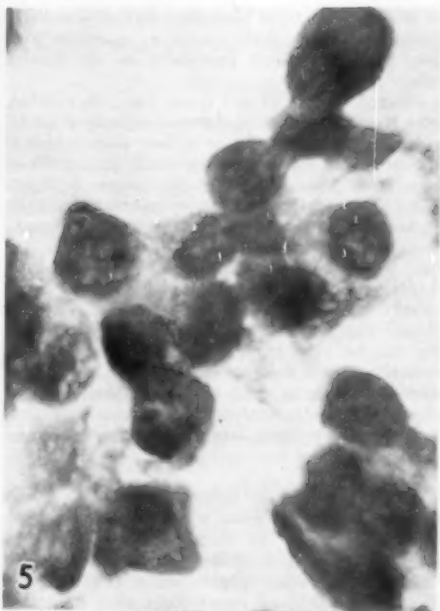


Fig. 5—Myeloma of the dog's tibia. The neoplastic cells were arranged both loosely and in clusters; they had predominantly reticulum cell features. H & E stain; x 400.

Fig. 6—The cell nuclei tended to be located eccentrically. H & E stain; x 400.

to reticulum cells in that they lacked chromatin clumps but, with their nuclei in eccentric position, were considered precursors to the plasma cells.

Other intermingled cell types, lesser in number, were characterized by moderately segmented nuclei with gradations of bean or kidney shapes, indicative of intermediate developmental stages. These cells were classified as of the myeloid series. There was considerable tumor growth with bone replacement by expansive and infiltrative growth. There were only remnants of bony spicules and they were in the process of osteolysis. Hemorrhages, possibly resulting from vascular tumor invasion or infarction, were excessive. Reactive fibrosis appeared as an abortive attempt at walling off the new growth which eventually broke through beneath the periosteum and infiltrated the musculature; strands of fibrous connective tissue grew into the tumor, causing compartmentalization. The periosteum was thickened from hypertrophy and there was periosteal new bone formation.

Spleen.—The basic histological structure was altered only in the areas which appeared grossly as small nodules. In them, lymphoid cells aggregated as small follicle-like structures in "flashes" of mature plasma cells (fig. 7); the trabeculae and blood vessel walls were infiltrated by neoplastic cells, predominantly early plasma cells, which also crowded the vascular lumens.

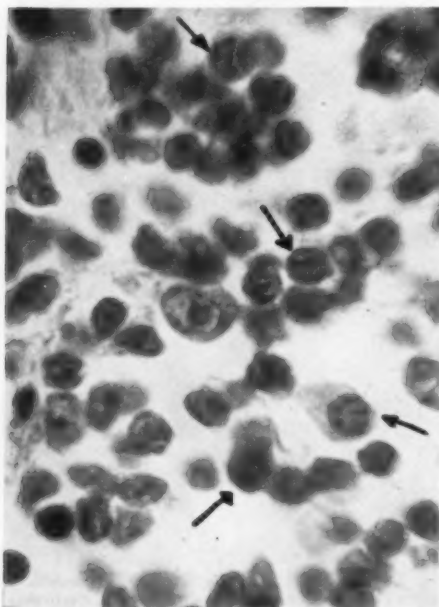


Fig. 7—Spleen with lymphoid cell aggregation; some of the cells had developed into plasma cells (arrows). H & E stain; x 200.

The splenic tissue adjacent to the nodules appeared to be pushed aside. The normal splenic tissue was congested; there were numerous hemosiderin-laden macrophages, a fair number of megakaryocytes, and scattered foci of erythrocytogenesis.

Lungs.—The tumor tissue closely resembled that in the bone marrow, the neoplastic cells being less mature than in the spleen and predominantly intermediate between reticulum and plasma cells. Mitotic figures indicated rapid growth. By means of reactive fibrosis, the tumors were sealed off from the adjacent lung parenchyma which was normal.

Bronchial Lymph Nodes.—The malignant cells were of the same type as in the lung. Regressive changes such as necrosis and hemorrhages set in. The adjacent tissue revealed heavy anthracotic pigmentation.

Adrenal.—The tumor involved particularly the medulla and was essentially the same as in the lung.

Testicles.—A small interstitial cell tumor and seminoma were found.

DISCUSSION

Multiple myelomatosis was disclosed upon histological study of the limited organ material available. Because of a diagnostic error, from the x rays of a bony lesion involving the proximal portion of the left tibia, the condition was not suspected and its rarity not realized. The lesion appeared to be widespread, involving the spleen, lung, bronchial lymph nodes, and one adrenal. The distribution of tumor masses in various organs would suggest either a metastatic or a multifocal origin.

In view of the large size of the bone tumor, as compared to the small growths in the soft tissues, it would appear that the condition began as solitary myeloma which eventually metastasized. The slight pleomorphism in the microscopic appearance of the tumors (except for the splenic lesions) suggested a disseminated multifocal origin rather than metastases. An embolic spread could not be excluded; indeed, numerous tumor emboli were found in splenic vessels, but leukemia was excluded by the presence of the dense cell clumps.

A number of stains were applied to characterize the neoplastic cells. Congo red failed to prove the presence of amyloid. Morphologically, the tumors were composed of a variety of primitive and more mature cells. In the spleen, the tumor cells were adult plasma cells with scattered foci of small lymphocytes. The advanced development of the malignant cells in the spleen,

as compared to the other tumor sites, might have been indicative of an on-the-spot transformation of reticulum cells into both plasma cells and lymphocytes. In the other organs, the cells were more primitive, being mostly reticulum cells or intermediate between reticulum and plasma cells. The intermingling of various developmental stages indicated a divergence in the development of the tumor cells. This observation is important with regard to the histogenesis of the myeloma cells. There is evidence that the reticulum cell is the potential tumor cell source which would readily explain the different myeloma types according to the predominant cell of any marrow series. In this dog, the major developmental direction obviously was toward the plasma cell; therefore, the lesion was classified as reticulum cell and plasma cell myelomatosis.

The roentgenological appearance of the bone tumor differed somewhat from cases in man by the lack of typical "pinched-out" areas and the presence of slight proliferative changes referable to the pathological fracture. The bone-destroying process was erroneously interpreted as due to osteolytic sarcoma.

Both the sex and age of the cases recorded are noteworthy. All animals were aged males, a situation similar in man.

SUMMARY

Myeloma is very rarely diagnosed in animals. A case in an aged male dog is reported here. It would appear that an originally solitary tumor of predominantly reticulum and plasma cell type in the tibia proceeded to metastasize to various organs.

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A lamb and 2 dogs, paralyzed as a result of infestation with *Dermacentor Andersoni* ticks, showed no motor response to electrical stimuli of the peroneal nerve. The paralysis seemed due to a neuromuscular block similar to that caused by curare. —*Vet. Bull.*, Dec., 1956.

General Use of Prednisone (Meticorten) in Pet Animal Practice

L. E. FISHER, D.V.M.

Berwyn, Illinois

This paper reports clinical observations on the use of prednisone on approximately 600 animals over a period of almost a year. The conclusions reported are purely clinical impressions, developed without the use of control animals. In a clinic-type practice, controlled investigations are difficult and conclusions must depend, partly, on the observations of the clients.

Prednisone was first used for the treatment of dermatitis and neurological disorders; later, for many other clinical conditions. The response in acute dermatitis seemed much more rapid than with other drugs, such as the antihistamines. Therapy was usually initiated with an injection of 20 to 40 mg. of the drug, followed by tablets (5 to 15 mg. per day) given orally at home. When used with other supportive therapy, including medicated shampoos, changes of environment, and diet as needed, improvement was achieved in 80 per cent of the animals in less than a week.

In all types of paraplegia, prednisone was used almost as extensively as ACTH; the results were comparable. No miracles occurred but, when used with injections of vitamin B₁₂ and supportive therapy, some animals recovered. No clinical response was noted when prednisone was used in animals with ataxia and generalized weakness associated with postdistemper encephalitis. In intervertebral disc problems, especially in the Dachshund, when the drug was used with enforced rest, salicylates, and vitamins, the animals seemed to be relieved. Many animals with such neurological ailments doubtless would recover spontaneously but the therapy definitely seemed to enhance and shorten the convalescent period.

In acute suppurative otitis externa (approximately 50 cases), prednisone was injected or given orally daily, along with topical antibiotic preparations. This seemed to markedly reduce the discomfort of the animal and to speed recovery. Corticosteroid ointment was also used topically, alone and in combination with antibiotics.

Dr. Fisher is a small animal practitioner in Berwyn, Ill. The author thanks Drs. Fred Newbury and Tom Drije for their cooperation in this study.

The results were not perfect but, when used judiciously, this therapy is beneficial.

For inflammatory conditions of the cornea, an ophthalmic ointment incorporating antibiotics and prednisone was routinely prescribed. The reduction in pain and the seemingly more rapid healing were gratifying.

We have not used corticosteroids routinely in systemic infections but in debilitated animals that seemed to respond poorly to other therapy, injection of these drugs with the others seemed beneficial. This was especially true in mixed kennel infections. However, it should be remembered that the use of corticosteroid therapy frequently lowers resistance to infection.

In a limited number of animals with bone tumors, prednisone used alone or with analgesics seemed to be of value in reducing pain when surgery was not possible. Animals with general lameness, arthritis, spondylitis, acute orchitis, and general senility have shown improvement after its use.

Prednisone was also used beneficially in cats, monkeys, birds, skunks, and other pets. The dosage is in ratio to the body weight of that used in dogs.

To date, we have seen no serious toxic reaction that could be attributed directly to corticosteroid therapy. The main side effects were polydipsia, polyuria, and an occasional gastrointestinal upset; these reactions subsided when the dosage was lowered.

One of the principal dangers in using a drug with such general effects is that it may falsely indicate improvement when the animal's primary ailment actually is not affected. If not abused, the corticosteroids, such as prednisone, seem to be a valuable aid in pet animal practice.

Human Tularemia Transmitted by Bite of Cat

L. D. MILLER, D.V.M., and
E. L. MONTGOMERY, D.V.M.

Belton, Missouri

A woman, 62 years old, was given medical treatment, at Belton, Mo., on Sept. 13, 1956, for a severely ulcerated area at the distal joint of the left little finger. About a month previously, her cat had become

acutely ill and was confined to a small, closed building in the yard. During the succeeding ten days, the woman cared for the cat which, at times, would neither eat nor drink. On August 22, while attempting to feed it, the cat bit her on the left little finger at the base of the nail. The wound did not heal.

Subsequent investigation* revealed that the cat, as well as the family dog, frequently killed and ate wild rabbits but the woman denied having handled any of these rabbits. The appearance of the wound and the presence of an abscessed regional (axillary) lymph node, which required aspiration, lead the physician to suspect tularemia. A blood specimen from the woman, taken three weeks after the bite, showed a titer of 1:640 for *Pasteurella tularensis*.

A blood specimen from the cat, taken 70 days after the biting incident, showed a titer of 1:40 for *Past. tularensis*. On December 5, a second blood specimen from the cat showed a titer of only 1:20, while a blood specimen from the dog was negative.

Comments.—There is little doubt that this infection was transmitted from a cat with acute tularemia. What the cat's titer would have been at that time is a matter for speculation.

A second incidence of tularemia in man, recently reported from the same area, is now under investigation.

*By E. R. Price, Public Health Veterinarian, Missouri Division of Health.

Possible New Test for Leptospirosis

Routine procedures for the diagnosis of leptospirosis in man and animals have been based on the detection of specific antibodies in the serum. The agglutination test, using formalin-killed *Leptospira*, is less hazardous to laboratory personnel than the agglutination-lysis test which uses motile organisms. Both tests are relatively type-specific so a number of serotypes are required as antigens. The complement-fixation test has a broad spectrum. The new (hemolytic) test would be group-specific rather than type-specific, safer, and would provide a useful diagnostic tool for practicing physicians and veterinarians. It would be of value in epidemiological surveys.—*J. Am. M. A.*, Jan. 19, 1957.

Of 160 common agama lizards examined, 18 were fecal carriers of *Salmonella* organisms.—*Nature*, Jan. 19, 1957.

Drs. Miller and Montgomery are general practitioners in Belton, Mo.

Comments on Veterinary Medical Terms

Recently, one of our authors wrote, "It is gratifying to learn that not only a standard nomenclature, but a standard vocabulary is being developed for veterinary medicine."

As a growing science, veterinary medicine requires a growing vocabulary. Many terms which eventually attain dignity originated as field or laboratory jargon; others are adapted from other medical fields. However, some terms from both sources seem ill chosen and perhaps should be rejected, regardless of how widely they have been used.

Most of us would agree that "a standard nomenclature" is desirable but who is to be the final judge? The AVMA Journals usually accept the definitions of "Dorland" and "Webster," but when these do not provide suitably expressive terms, and in the absence of a higher authority, the decision falls upon the editorial staff and appropriate consultants. Whether terms are wisely chosen, only time can tell.

A high percentage of submitted papers contains one or more terms which, in some way, require revision to comply with the standards of the AVMA Journals. These terms fall into several categories such as: abbreviated forms; adjectives or verbs used as nouns; fabricated new terms; and unsuitable terms adapted from medicine. Each of these categories would provide grist for considerable discussion so let us begin with the last.

QUESTIONABLE TERMS FROM MEDICINE

Among terms taken from medicine which are not applicable to domesticated animals, most of which are quadrupeds, are several loosely used anatomical terms, such as "ankle" for the fetlock joint in solipeds and cloven-hoofed animals, and breasts for mammary glands. (Where is the breast region in a quadruped?)

A well-established term no longer accepted by the AVMA Journals is "autopsy," since "auto" implies "self." "Necropsy" is preferred over "postmortem examination," since it is fully appropriate and considerably briefer.

SYMPTOMS VERSUS SIGNS

Of greater significance is the current emphasis placed on the proper use of the terms *symptom* and *sign* by all branches of medicine. Dorland's definition of a symptom as "any functional evidence of disease or of a patient's condition," would seem to justify the present usage of the term in veterinary medicine. However, other dictionaries are more specific. Stedman states, "A sign is an objective symptom, a symptom is a subjective sign of disease; also, a sign is 'discoverable by a physician' while a symptom is 'experienced by the patient.'" Gould says that a sign is a "mark" or "physical manifestation of disease" while a symptom "leads to complaints on the part of the patient." Webster says, "symptoms and signs are often used synonymously, but properly they differ in that the former is perceived only by the patient." If this view be accepted, the term *symptom* would seldom be applicable to lower animals.

The following may illustrate the proper use of these terms. The first term is a *sign* (discoverable by the veterinarian), the second term in parenthesis is an associated *symptom* (perceivable by the animal), thus: rubbing or scratching (itchiness); limping (pain or weakness); fever (chills, generalized aches); staggering (dizziness); coughing (respiratory irritation); vomiting (nausea); diarrhea (possible intestinal irritation); restlessness with rolling and twisting (abdominal pain); and depression (possibly a headache).

We may not be sure that an animal is experiencing pain, is dizzy, or is nauseated; however, we can observe signs of these symptoms.

If the term *symptom* were discontinued, could we still say that a known infected animal is *asymptomatic*? Would it not be more correct to say it had a *subclinical infection*? Also, what about the term *symptomatology* (the study, or combination, of symptoms), in veterinary medicine? Perhaps *syndrome* (the sum of signs) would be more correct in many cases.

Current Literature

BOOKS AND REPORTS

Parasitic Mites

The National Pest Control Association has sponsored a book on the parasitic mites of animals and man. The authors are well-known specialists. Subject matter is aimed primarily toward teachers and research workers. Known therapy and other control measures are given, hence the veterinary practitioner will find much of value. The book is one of the best sources of information on the diagnosis and control of the mites that cause mange and scab, as well as those that suck blood and damage the feathers of poultry. The mites affecting dogs and cats are also well discussed. This manual is excellently printed, illustrated, documented, and bound. The text is modern and the price is modest.—[*A Manual of Parasitic Mites of Medical or Economic Importance*. By E. W. Baker, T. M. Evans, D. J. Gould, W. B. Hull, and H. L. Keegan. 170 pages. 59 illustrations. National Pest Control Association, Inc., 30 Church St., New York 7, N. Y. 1956. Price \$4.25.]—E. A. BENBROOK.

Procaine Penicillin in Animal Nutrition

The current knowledge on penicillin in animal nutrition is summarized under the headings description; discovery of growth-stimulating effect; growth response in poultry, swine, and ruminants; effect on reproduction; effect on vitamin requirements; and uses of high levels in feed. There is an excellent bibliography as well as an appendix listing supplementary publications for the investigator wishing more detailed information. The material is thoroughly indexed.—[*Procaine Penicillin in Animal Nutrition*. Merck service bulletin. Merck and Co., Inc., Rahway, N. J., 1956. Price not given.]

Notes on Atomic Energy for Medical Officers

This is an excellent outline for instructions in nuclear physics and the biological effect of nuclear radiations. However, as defined in the preface, an objective is to provide "an introduction to the books listed in the bibliography," the most recent of which was published in 1950. The book would have been appreciated in 1950, but it is now out of date. It would be of little value to veterinarians.—[*Notes on Atomic Energy for Medical Officers*. By the Royal Naval Medical School, Hampshire, England. 169 pages. Illustrated. Philosophical Library, Inc., New York, N. Y. (1956). Price \$4.75.]—B. F. TRUM.

Handbook of Biological Data

A wealth of data on plant, animal, and preclinical medical sciences are summarized in tables, graphs, charts, and diagrams with explanatory headings and footnotes. An appendix contains taxonomy, general definitions, and conversion factors. The material, covering such subjects as genetics, cytogenetics, and reproduction; nutrition,

digestion, and metabolism; respiration and circulation; symbiosis and parasitism; ecology and biogeography, is thoroughly indexed. This book would be a valuable reference in school libraries and research laboratories.—[*Handbook of Biological Data*. William S. Spector, Editor. 584 pages. W. B. Saunders Co., Philadelphia, Pa. 1956. Price \$7.50.]

Mastitis Abstracts

Abstracts of some of the recent (1953-1955) literature on mastitis have been catalogued, indexed, and bound in a loose-leaf folder which will permit adding further pages. The booklet is subdivided into the following classifications: infection, diagnosis, pathology, treatment, control, and index.

No attempt has been made to cover all the literature on mastitis, nor are the abstracts detailed. However, most authors are able to supply reprints for those interested in further details on particular articles. The senior author and his address are given with each abstract.

The booklet serves as a handy, up-to-date (new information is to be supplied each year) reference on this disease.—[*Mastitis Abstracts*. Edited by James M. Murphy. Published by the editor at Ithaca, N. Y. 1956. Price \$6.00.]

The Cow Killers

The comedy and the tragedy of the behind-the-scenes story of "The People" and the Joint Mexican-U. S. Commission for the Eradication of Foot-and-Mouth Disease in Mexico is cleverly illustrated by a Texas cowboy who served with the commission. The text was written by novelist Fred Gipson from the artist's notes.—[*The Cow Killers*. By Bill Leftwich and Fred Gipson. 130 pages. University of Texas Press, Austin, Texas. 1956. Price \$4.95.]

Cornell Veterinarian to Publish New Journal on Avian Diseases

The Cornell Veterinarian, Inc., announces that it will publish a new quarterly, *Avian Diseases*, containing articles on both the science and control of avian diseases. The first issue, to be published this spring, will be dedicated to the memory of Dr. Fred R. Beaudette and will feature an article on his life and work.

Dr. P. P. Levine, of Cornell University, Ithaca, N. Y., is the editor of the new publication; the associate editors are Drs. Erwin Jungherr, University of Connecticut; Robert S. Gentry, Pennsylvania State University; Morris Cover, University of Delaware; and Harold Chute, University of Maine. Manuscripts in the field of avian diseases are solicited and may be sent to any one of the editors.

Subscriptions should be sent to Dr. J. H. Whitlock, the business manager of *Avian Diseases*, New York State Veterinary College, Cornell University, Ithaca, N. Y. Subscription prices are: United States, territories and possessions, and Canada, \$5 a year; foreign, \$7.

THE NEWS

Cornell Nutrition Conference Scheduled

Cornell University's Nutrition Conference for Feed Manufacturers will be held at the Statler Hotel, Buffalo, N. Y., Oct. 31-Nov. 1, 1957. This conference, sponsored by the Departments of Animal Husbandry, Poultry Husbandry, and Biochemistry and Nutrition and the Graduate School of Nutrition of Cornell, is conducted in cooperation with the American Feed Manufacturers' Association.

Copies of the conference program and cards providing for preregistration and hotel reservations will be mailed in late August to persons who attended previous conferences. Persons not on the conference mailing list may obtain copies of this material by writing to Prof. J. K. Loosli, Stocking Hall, Cornell University, Ithaca, N. Y. Professor Loosli is chairman of the 1957 meeting.

The purpose of the Cornell Nutrition Conference is to present information on recent advances in the science of animal nutrition and their application to the formulation of rations for farm animals. It is hoped by this means to improve the services to agriculture of the feed manufacturing industry, the College of Agriculture, and the School of Nutrition at Cornell.

Dr. Carpenter Featured in Poultry Weekly

The Poultryman, a national weekly newspaper of the poultry industry, carries an article in the January 4 issue featuring Dr. Cliff D. Carpenter, president, Institute of American Poultry Industries.

Dr. Carpenter's recent efforts in developing greater international trade for poultry and poultry products are given special mention. Dr. Carpenter has served as president of the Institute of American Poultry Industries since 1944.

National Association of Federal Veterinarians

The annual meeting of the National Association of Federal Veterinarians was held Nov. 28, 1956, at Chicago, Ill., in conjunction with the annual meeting of the U. S. Livestock Sanitary Association.

Items of business conducted at the meeting included the authorization of a donation of \$250 to the AVMA Research Fund, the adoption of resolutions pertaining to salaries of federal employees, the establishment of a public service section within the AVMA, and an expression of appreciation to the Department of Agriculture for their cooperation in arranging for increasing numbers of federal veterinarians attending the national meetings.

Dr. F. L. Herchenroeder was re-elected president and Dr. W. H. Hannemann re-elected vice-president-at-large.

AMONG THE STATES AND PROVINCES

Arkansas

State Association.—At the forty-first annual meeting of the Arkansas V.M.A., held at the Hotel Marion, Little Rock, on Jan. 29-31, 1957, the following officers were elected for the ensuing term: W. M. Taegel, Little Rock, president; S. K. Morrison, Bentonville, vice-president; and T. D. Hendrickson, Little Rock, secretary-treasurer.

The program included the following out-of-state speakers: R. J. Beamer, College Station, Texas; R. T. Hander, Windhorst, Texas; F. H. Oberst, Manhattan, Kan.; and J. W. Wolfe, Stillwater, Okla. A panel discussion on practice tips was held by several Arkansas veterinarians.

Dr. C. T. Mason, Little Rock, was presented a plaque as the outstanding Arkansas veterinarian of the year.

s/T. D. HENDRICKSON, Secretary.

California

Southern Association.—The Southern California V.M.A. held its installation dinner and dance at the Beverly Hilton Hotel, Beverly Hills. Attending were 150 veterinarians and their wives.



Left to right—Drs. Philip C. Olson, president, Southern California V.M.A.; A. Mack Scott, president, California State V.M.A.; W. W. Putney, retiring president, Southern California V.M.A.; and AVMA Golf Trophy (inset).

The following officers were installed for the 1957 term: Philip C. Olson, Hollywood, president; W. D. Ommert, Hollywood, president-elect; Howard Taylor, Los Angeles, first vice-president; Burton Pike, Long Beach, second vice-president; Floyd Wilcox, Los Angeles, treasurer; and Robert Schroeder, Downey, secretary.

s/DON MAHAN, Public Relations.

Florida

State Association.—At a recent meeting of the executive board of the Florida State V.M.A., a donation in the amount of \$500 was authorized to be forwarded to the Auburn Research Fund at Auburn, Ala.

The executive board also authorized the establishment of a committee to study the problem of supplying adequate veterinary service in each area of the State of Florida, and to recommend a program to be presented to the state association for their consideration.

The date of the 1957 meeting of the Florida V.M.A. will be October 13-15 at the Fort Harrison Hotel, Clearwater, Fla.

Iowa

Auxiliary Convention.—The annual convention of the Women's Auxiliary to the Iowa Veterinary Medical Association was held Jan. 22-24, 1957, at the Hotel Fort Des Moines in Des Moines. The Auxiliary registration was 262.

The president's reception and tea were held on Tuesday afternoon, followed by the business meeting at which Mrs. J. K. Dewar of Cherokee, the Auxiliary president, presided. Officers elected for the coming year were Mrs. E. J. Osen, Anita, president; Mrs. F. J. Linn, Sheffield, president-elect; Mrs. G. W. Rieke, Victor, vice-president; Mrs. C. D. Lee, Ames, secretary; and Mrs. Lester Proctor, Oelwein, treasurer. Delegates to the Women's Auxiliary of the American Veterinary Medical Association are Mrs. R. H. Hedge, Hedrick, delegate, and Mrs. V. U. Thomson, Clearfield, alternate.

Kansas

Seminar Day for Students.—The seventh annual alumni-senior seminar day for students was held February 2 in the Kansas State College School of Veterinary Medicine.

Speakers for the day, who discussed with graduating seniors various aspects of different fields of veterinary medicine, included Drs. L. A. Latham, Wetmore, large animal practitioner; O. L. Kelsey, Topeka, regulatory veterinary medicine; G. L. Dunlap, Kansas City, Mo., commercial veterinary medicine; and M. D. Rockhold, Topeka, small animal practitioner.

Louisiana

Louisiana Auxiliary Meets.—The Women's Auxiliary to the Louisiana Veterinary Medical Association held its eighth annual meeting in the parlor of Pleasant Hall, Louisiana State University, Baton Rouge, on Jan. 29, 1957. Mrs. A. E. Coombs, Skowhegan, Maine, president of the AVMA Auxiliary and Mrs. R. A. Runnells, past-president, were our special guests. Other guests were Mrs. B. W. Kingrey, Ames, Iowa, and Mrs. Glenn Gates, Clarksdale, Miss.

The following officers were elected and installed by Mrs. Coombs: president, Mrs. John Morrison, Opelousas; vice-president, Mrs. R. R. Cowart, Alexandria; and secretary-treasurer, Mrs. W. T. Oglesby, Baton Rouge.

Following the business meeting, we met at the Faculty Club for lunch and from there went to the dedication ceremonies of the new \$600,000 Veterinary Research Center on the campus.

S/MRS. W. T. OGLESBY, *Secretary.*

Missouri

State Association.—The sixty-fifth annual meeting of Missouri V.M.A. was held Feb. 15-17, 1957, at St. Louis. Featured on the general sessions were Wayne O. Kester, AVMA president; L. A. Rosner, state veterinarian; Frank R. Booth, Elkhart, Ind.; M. J. Twiehaus, Manhattan, Kan.; and Captain Vernon Tipton, St. Louis.

Small animal section speakers included Drs. N. B. Tennille, Stillwater, Okla.; C. L. McGinnis, Peoria, Ill.; and R. L. Rudy, Columbus, Ohio.

Large animal section speakers included Drs. J. L. McAuliff, Cortland, N.Y.; H. S. Bryan, Upjohn Laboratories, Michigan; F. H. Oberst, Manhattan, Kan.; R. W. Boone, Jefferson City; and Mr. H. E. Whitmire, Whitmire Research Laboratories, St. Louis.

Minnesota

Minnesota Auxiliary Meets.—The annual meeting of the Women's Auxiliary to the Minnesota State Veterinary Medical Society was held at the Radisson Hotel in Minneapolis on Feb. 4-6, 1957, in conjunction with the sixtieth annual meeting of the Minnesota State Veterinary Medical Society. Mrs. E. A. Woelfler, the first vice-president of the Women's Auxiliary to the AVMA, was our guest of honor and speaker.

The program included a tea, breakfast, business meeting, coffee hour, banquet, and dance.

Contributions were made to the Library Fund, the outstanding junior veterinary student at the Minnesota School of Veterinary Medicine, the AVMA Research Fund, and the AVMA Memorial Fund.

The following officers were elected: Mrs. E. P. Eder, Blue Earth, president; Mrs. G. E. Jacobi, Minneapolis, first vice-president; Mrs. J. H. Dunnwald, Waterville, second vice-president; Mrs. A. P. Ortonen, Ortonville, secretary; and Mrs. P. C. Enge, Windom, treasurer.

S/MRS. ELLIS GLOSS, *Retiring President.*

North Dakota

North Dakota Auxiliary.—The Women's Auxiliary to the North Dakota Veterinary Medical Association met in Jamestown, N. Dak., June 24-26, 1956.

During the first evening, the auxiliary mem-

bers were joined by their husbands at a buffet supper in the Gladstone Hotel. Later that evening, the auxiliary and guests attended a reception in the Women's Club rooms.

The second day, a luncheon was enjoyed by the members and guests in the Jamestown Presbyterian Church. Mrs. J. H. Winslow said grace. Mrs. D. A. Wire presided at the business meeting. The Student Loan Fund was allocated \$25 again this year. Mrs. F. M. Bolin explained the Memorial Fund, and an interesting report was given by our delegate on the Minneapolis meeting.



Newly elected officers of the Women's Auxiliary to the North Dakota Veterinary Medical Association are (left to right)—Mrs. J. O. Foss, Minot, president; Mrs. D. A. Wire, Valley City, past-president; and Mrs. L. G. Best, Wahpeton, treasurer.

The following officers were elected for the coming year: Mrs. J. O. Foss, Minot, president; Mrs. S. S. Bjornson, West Fargo, vice-president; Mrs. C. H. Winslow, La Moure, secretary; Mrs. L. G. Best, Wahpeton, treasurer; and Mrs. D. F. Eveleth, Fargo, delegate.

The women joined their husbands for a banquet and dance in the evening.

s/MRS. L. G. BEST, Treasurer.

Oregon

Auxiliary Holds Winter Meeting.—The winter meeting of the Women's Auxiliary to the Oregon V.M.A. was held in Portland on Feb. 1, 1957.

Mrs. Earl Derflinger, delegate to the meeting of the Women's Auxiliary to the AVMA, held in San Antonio, Texas, last October, reported on this meeting.

The Auxiliary voted to allow a six-month complimentary membership in the Oregon Auxiliary to any wife of a veterinary graduate coming to Oregon for the first time.

It was agreed that the Oregon Auxiliary donate a memorial book to the veterinary college in Colorado and, also, to make donations to the AVMA Research and Student Loan funds.

The nominating committee submitted names

for new officers for 1957, and they were unanimously elected. They are: president, Mrs. Ralph Younce, Hillsboro; vice-president, Mrs. Earl Derflinger, Salem; secretary, Mrs. Dallen Jones, Roseburg; and treasurer, Mrs. Kermit Petersen, Salem. There were 39 members present.

s/MRS. DALLEN JONES, Secretary.

Pennsylvania



Preparing to open the closed-circuit telecast in color at the fifty-seventh annual conference of veterinarians sponsored by the School of Veterinary Medicine of the University of Pennsylvania on Jan. 8, 1957, Philadelphia, are (left to right)—William L. Henning, Secretary of Agriculture, Commonwealth of Pennsylvania; Drs. Mark W. Allam, dean, School of Veterinary Medicine, University of Pennsylvania; and Lyman E. Jackson, dean, School of Agriculture, Pennsylvania State University.

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Auxiliary Members Attend Conference.—The fifty-seventh annual conference of veterinarians was held Jan. 8-9, 1957, at the University of Pennsylvania in Philadelphia. Wives of alumni members were guests of the faculty at a luncheon held in Houston Hall. Honored guests were Mrs. Frederick Schneider, Pennsylvania's only charter member to the Auxiliary of the AVMA, and Mrs. Alfred Coombs, AVMA Auxiliary president.

Dr. Mark Allam, who presided, introduced Mrs. William Henning, Mrs. Lyman Jackson, Mrs. James Muffy, Mrs. Mark Allam, and honored guests.

A half-hour radio broadcast on the Mary Jones Show over Station WFIL featured interviews with each of these ladies. At the conclusion of the luncheon and broadcast, the committee in charge conducted a tour of the

Veterinary School which is undergoing extensive changes.



Members of the Women's Auxiliary to the AVMA and the Pennsylvania State V.M.A. pictured at their luncheon at the fifty-seventh annual conference of veterinarians, sponsored by the School of Veterinary Medicine, University of Pennsylvania, on Jan. 8, 1957, in Philadelphia, are (left to right)—Mrs. William Stone, president, Women's Auxiliary to the Student Chapter of the AVMA, University of Pennsylvania; Mrs. Alfred Coombs, president, Women's Auxiliary to the AVMA; Mrs. Fred Schneider, Philadelphia, charter member, Women's Auxiliary to the AVMA; and Mrs. James Muffy, president, Women's Auxiliary to the Pennsylvania State V.M.A.

South Carolina

Women's Auxiliary Annual Meeting.—The annual business meeting of the Women's Auxiliary to the South Carolina V.M.A. was held at the Columbia Hotel, Columbia, on Jan. 19, 1957. The following officers were elected for the 1957-1958 term: Mrs. G. K. Smith, Spartanburg, president; Mrs. W. R. Rawlinson, Manning, vice-president; Mrs. L. C. Merritt, Sumter, treasurer; Mrs. H. L. Sutherland, Union, membership chairman.

It was voted to continue with donations as before with \$25 to the Student Loan Fund, \$10 to the Research Fund, and \$10 to each of the libraries at Auburn and the University of Georgia.

Mrs. M. R. Blackstock was elected to serve as delegate to the Women's Auxiliary to the AVMA house of representatives.

Following the business meeting, 31 women enjoyed a banquet in the hotel.

S/SARA M. (Mrs. H. L.) SUTHERLAND, *Secretary*.

Texas

State Board Examinations.—The Texas State Board of Veterinary Medical Examiners announces that the next veterinary licensing examination will be held on June 3-4, 1957, at Texas A. & M. College, College Station.

The completed applications must be returned not later than 30 days before the examination date. Requests for applications and ad-

ditional information should be addressed to: Mr. T. D. Weaver, executive secretary, Texas State Board of Veterinary Medical Examiners, 207 Capital National Bank Building, Austin 16, Texas.

• • •

Texas V.M.A. Auxiliary.—The Women's Auxiliary to the Texas Veterinary Medical Association met in conjunction with the Texas V.M.A. at the Galvez Hotel in Galveston on Jan. 27-29, 1957.

At the business meeting, it was voted to give the wives of veterinarians graduating in June from Texas A. & M. College a complimentary membership to the following annual meeting in January. A donation was also voted to the AVMA Research Fund and the AVMA Auxiliary Award Fund.



Mrs. W. W. Armistead, president of the Women's Auxiliary to the Texas V.M.A.

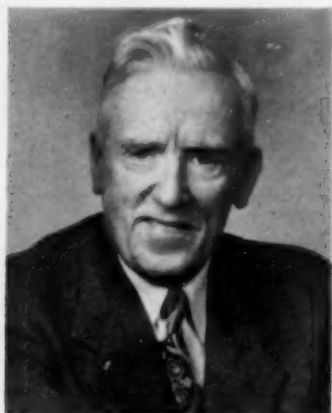
The following officers were elected for the ensuing term: president, Mrs. W. W. Armistead, College Station; president-elect, Mrs. Henry E. Jameston, Galveston; vice-president, Mrs. J. E. Habluetzel, Corpus Christi; secretary-treasurer, Mrs. Walter Juliff, San Angelo; and corresponding secretary, Mrs. Hudson Jones, Taylor.

Dr. Harriet Felton, M.D., spoke on "Safe-guards Against Household Accidents and Poisons." On Monday evening, a lovely buffet dinner was followed by a dance. On Tuesday, we had lunch with our husbands and left for our homes with a satisfied feeling of having learned, enjoyed, and benefited by our associations with the Auxiliary and with a deeper appreciation for our husband's profession.

S/MRS. LEON G. CLOUD.

Wisconsin

Dr. O'Connell Named Veterinarian of the Year.—At the forty-first annual meeting of the Wisconsin V.M.A. held Jan. 9-11, 1957, Dr. H. J. O'Connell, state veterinarian, was named veterinarian of the year.



Dr. H. J. O'Connell

Dr. O'Connell was honored for his outstanding service last year in heading the state's expanded efforts in controlling livestock diseases

and his work in veterinary programs. Dr. O'Connell is a native of Tomahawk, Wis., and has been associated with the State Department of Agriculture since 1924. He was named head of its animal health division in 1951.

FOREIGN NEWS

Germany

German Veterinary Association.—The regular three-day biennial meeting of the German Veterinary Association was held recently in Bingen, Germany, with 1,200 veterinarians and their wives in attendance. Dr. Karl Ohly, president, presided at the conference.

The program included the various professional activities of veterinarians in Germany. Particular emphasis was placed on programs for the eradication of brucellosis, bovine tuberculosis, rabies, foot-and-mouth disease, and other infectious diseases of animals.

Meat and milk hygiene in Germany was discussed in several papers on these subjects. The various regulatory programs for the control of the communicable diseases in the 11 *laender* (states) of West Germany were reviewed for the purpose of establishing more uniform and effective methods of control.

The group had an enjoyable trip on a chartered cruise on the Rhine river on the late afternoon and evening of the second day. The

Norwegian and Turkish Military Veterinarians Visit U.S. Army Veterinary Activities in Europe

Turkish and Norwegian military veterinarians recently spent two weeks studying methods used by U.S. Army Veterinary Service in food inspection in Germany. The U. S. Army Military Dog Training Center was also observed.



In the front row are (left to right) Captain G. Hval, Norwegian Army; Captain John H. Morris, V.C., U.S.A.; Major Halvorsen, Assistant Chief, Veterinary Corps, Norway; (back row) Major Dale McNulty, Q.M.C.; and Lt. Col. Edwin J. Sunder-ville, V.C., U.S.A.

4 Shown are (left to right) Lt. Col. Harold M. Deane, V.C., U.S.A.; Major General S. B. Ersoy, Chief Veterinarian of the Turkish Army; Lt. Col. N. Eray, Commandant, Turkish Military Veterinary Academy; and Captain John H. Morris, V.C., U.S.A.



Dr. Karl Ohly, President

section on the morning of the third day was formal with talks by visiting dignitaries and a short concert of semiclassical music.

STATE BOARD EXAMINATIONS

NEW YORK—June 12-13, 1957. Practical examination, Ithaca. Mr. James O. Hoyle, secretary, 23 S. Pearl St., Albany. Week of July 8, 1957. Written examinations: New York City, Albany, Syracuse, Buffalo, Rochester.

NORTH CAROLINA—June 24-26, 1957. Asheville. Dr. James I. Cornwell, secretary, 65 Beverly Road, Beverly Hills, Asheville.

OHIO—June 4-5, 1957. Columbus. H. G. Geyer, Office of the Secretary Ex-Officio, Division of Animal Industry, Room 720, State Office Building, Columbus 15, Ohio.

TENNESSEE—June 24-25, 1957. Nashville. Dr. W. O. Greene, secretary, State Office Bldg., Nashville.

TEXAS—June 3-4, 1957. College Station. Mr. T. D. Weaver, executive secretary, Texas State Board of Veterinary Medical Examiners, 267 Capital National Building, Austin 16, Texas.

DEATHS

Star indicates member of AVMA

★**Alfred E. Erickson** (GR '18), 67, died in Charlotte, Mich., on Oct. 19, 1956. Dr. Erickson served as secretary and president of the Capitol (Mich.) V.M.A. in 1926-1927. Dr. Erickson joined the AVMA in 1926. He is survived by his widow.

★**Arnold A. Feist** (UP '12), 65, St. Paul, Minn., died Dec. 26, 1956.

Dr. Feist had practiced in St. Paul his entire professional career, except for the time spent in the military service during WW I. He had specialized in small animal medicine for the past 20 years. He was a honorary member of the Minnesota V.M.A. and was a member of the AVMA for many years.

He is survived by his widow.

★**W. R. Giesbrecht** (ONT '39), 40, Winnipeg, Man., was killed in an automobile accident near Lorette, Man., on Jan. 1, 1957. His wife and two sons were injured in the same accident. Dr. Giesbrecht joined the AVMA in 1940.

Darius W. Gilbert (NYC '92), 82, Cohasset, Mass., died Jan. 6, 1957. Dr. Gilbert had been a member of the Massachusetts Veterinary Association since 1900 and was made an honorary member in 1951. He had been a member of the AVMA.

Herbert F. Harms (NYS '08), 71, Pearl River, N. Y., died Oct. 9, 1956. Surviving are his widow and two sons.

Arthur O. Hughes (KCV '10), 69, Mangum, Okla., died Dec. 18, 1956.

Ray S. Long (COL '16), 71, formerly a resident of Upham, N. Dak., died Nov. 26, 1956, at Tampa, Fla. Dr. Long retired from practice in 1945. He had been a member of the AVMA. Surviving are his widow, a daughter, and four sons.

Russel W. Meyer (ISC '24), 57, Iowa City, Iowa, died Jan. 5, 1957. Dr. Meyer was in practice with Drs. F. J. Crow, Jesse G. Irwin, and Irvin P. Irwin in Iowa City. He is survived by his widow and a daughter.

★**L. R. Montgomery** (OSU '14), 67, Casselton, N. Dak., died Dec. 14, 1956. He was a member of the North Dakota V.M.A. Dr. Montgomery joined the AVMA in 1938.

Elbert H. Morris (IND '18), 64, died Nov. 10, 1956, at Indianapolis, Ind. Dr. Morris practiced at Milroy, Ind., until 1941 when he moved to Indianapolis, and was engaged in meat inspection work. He is survived by his widow and two children.

Andrew S. Pyles (KCV '61), 75, Wichita, Kan., died Nov. 25, 1956. Dr. Pyles had been associated with the Western Weighing and Inspection Bureau for 30 years. He is survived by his son Dr. Ray S. Pyles, Kansas state veterinarian.

★**William C. Verploeg** (ICS '19), 61, Pella, Iowa, died Dec. 26, 1956. Dr. Verploeg was born at Pella and returned to his home town to practice, following his graduation from Iowa State College in 1919. He was a foremost breeder and active participant in Shetland pony organizations. Dr. Verploeg was highly respected by his colleagues and by those whom he unselfishly served through his practice. He was a member of the Iowa V.M.A. and a member of the AVMA since 1924. His widow and three daughters survive.

★**Alex E. Wight** (HAR '97), former chief of the Tuberculosis Eradication Division, Bureau of Animal Industry, and AVMA president in 1940-1941, died in Washington, D. C., on March 11, 1957, at the age of 81. A more complete obituary will be published in the next issue of the JOURNAL.

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PROFESSIONAL LITERATURE AVAILABLE ON REQUEST

Department of Veterinary Medicine
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ORGANIZATION SECTION

Don't Miss the AVMA Convention Cleveland—August 19-22, 1957

Committee on Local Arrangements, AVMA Convention, in Cleveland



At the meeting of the Local Committee in Cleveland on February 19, plans were discussed for the Ninety-Fourth AVMA Annual Meeting, to be held in that city August 19-22.

Seated (left to right)—Mrs. D. A. Rickards, Mrs. W. W. Hafenbrack, Mrs. R. W. Grundish, Dr. Roger Grundish, Mrs. H. B. Roberts, Dr. H. B. Roberts, Mrs. H. E. Jensen, Dr. H. E. Jensen, Mrs. F. A. Coy, Mrs. R. I. Fisher, Mrs. R. W. Stockstill, and Mrs. L. R. Richardson.

Standing (left to right)—Dr. D. A. Rickards, Mrs. B. K. Brown, Mrs. W. K. Raub, Dr. R. W. Stockstill, Dr. J. W. Ralston, Mrs. J. F. Robertson, Dr. C. C. Wagner, Dr. F. A. Coy, Dr. R. D. Larcey, Dr. W. A. James, Dr. A. J. Sirilo, Dr. W. H. Crago, and Dr. H. E. Kingman, Jr. (AVMA Staff).

The Cleveland Auditorium Where the Ninety-Fourth Annual Meeting Will Be Held



The Cleveland Auditorium and the Mall is located in the heart of the downtown area. The many air-conditioned rooms accommodate large groups up to 10,000 persons, as well as small groups. One of the most popular convention halls in the country, it has more than a quarter million feet of exhibit space in the underground area.

Prevent relapses
in milk fever
with calcium-raising
PARTEROL*



Parterol is an oil-soluble steroid that is specific for raising the blood calcium level following parturition. Parterol supplements the hormone secreted by the parathyroid glands, and thus helps to mobilize calcium stored in the bones and to increase the absorption of calcium from the intestinal tract.

One clinical study of 328 cases of milk fever treated showed that Parterol I.M. and calcium I.V. were effective in 98% of the cases.¹

Indication and dosage:

To prevent relapses in milk fever by supplementing the parathyroid hormone during periods of stress on the calcium-regulating mechanisms due to increased demand for calcium at parturition. After treatment with calcium, Parterol should be given at the rate of 10 mg. per cow.

To prevent milk fever by regulating the calcium blood and tissue level at the critical calcium-utilization period at parturition. Parterol should be given 24 hours prior to parturition in a dosage of 10 mg.

Supplied: In 30 cc. sterile vials, each cc. containing 2.5 mg. dihydrotachysterol in oil.

1. Harris, J.R. and Clarkson, T.B., Prevention of Relapses in Milk Fever, Vet. Medicine, 12:696 (Dec. 1966)

Write for literature

*Patent applied for

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Award Nominations Invited

President Wayne O. Kester, chairman *ex officio* of the AVMA Committee on Awards, announces that members are invited to submit nominations for the awards administered by the Association which are to be given in 1957.

This Committee selects the recipients for three awards: the Twelfth International Veterinary Congress Prize, the AVMA Award, and the Borden Award. A fourth award, the Humane Act Award, is also administered by the Association, but nominations for it are handled, and recipients selected by, the Special Committee on Humane Act Award.

The Practitioner Research Award, established and first awarded in 1956, is administered by the AVMA Research Council.

AVMA Award

Established in 1931, this award was not activated until 1943. It consists of a medal and certificate and is bestowed in recognition of "meritorious service to the membership." There have been eight recipients to date: Drs. J. R. Mohler, L. A. Merillat, A. H. Quin, A. A. Husman, G. W. Gillie, N. J. Miller, C. W. Bower, and Col. Robert J. Foster.

Twelfth International Veterinary Congress Prize

Established in 1936, this award consists of a cash prize of \$125 and a certificate. It is bestowed in recognition of "outstanding service by a member of the AVMA to veterinary science and the veterinary profession." To date, there have been 20 recipients: Drs. D. H. Udall, G. H. Hart, J. R. Mohler, I. F. Huddleson, A. Eichhorn, R. A. Kelsner, Otto Stader, D. F. Luckey, L. A. Merillat, T. H. Ferguson, W. J. Butler, A. E. Cameron, G. Dikmans, N. S. Mayo, R. S. Sugg, C. E. Cotton, L. Van Es, F. W. Schofield, B. T. Simms, and Hadleigh Marsh.

Borden Award and Medal

Established in 1944, the Borden Award consists of \$1,000 in cash and a gold medal. It is bestowed in recognition of "outstanding research contributing to dairy cattle disease control." The conditions specified by the donor require that the recipient (not necessarily a veterinarian) shall have published the results of his work in recognized scientific journals and that a statement shall be furnished the Borden Company Foundation setting forth the qualifications of the recipient, together with a pertinent bibliography of his published investigations.

There have been 13 recipients of the Borden Award: Drs. I. F. Huddleson, W. L. Boyd, W. E. Cotton, J. Traum, A. F. Schalk, R. R. Birch, J. Farquharson, L. A. Klein, R. B. Little, G. H. Hart, M. G. Fincher, H. E. Kingman Sr., and H. L. Gilman.

Deadline and Rules for Nominations

Nominations for any of the foregoing awards should be addressed by AVMA members to: Committee on Awards, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill., and must be received not later than June 1, 1957.

Each nomination should contain *specific* details and comprise a brief of the nominee's accomplishments and qualifications for the award in question. The nomination must also contain brief biographical data, including an account of the nominee's professional background and experience. *Eight copies* of the data and brief must be furnished.

The Committee on Awards will review the various nominations and supporting data and select recipients for this year's awards; the awards will be presented to the recipients at the opening general session of the AVMA convention in Cleveland, August 19-22.

The Committee on Awards is *ex officio* and comprises Drs. W. O. Kester, chairman (as president of the AVMA), W. W. Armistead (as president-elect); T. Lloyd Jones (as chairman of the Executive Board); K. F. Wells (as veterinary director-general of Canada); W. A. Hagan (as AVMA representative to the Division of Medical Sciences, National Research Council); E. W. Young (as chief of the Army Veterinary Corps); and M. R. Clarkson (as deputy administrator, Agricultural Research Service, U.S.D.A.).

Nominations for Humane Act Award

Veterinarians and students in veterinary medicine throughout North America are being asked to submit nominations for the AVMA Humane Act Award given annually to a boy or girl, not over 18 years old, who has performed an outstanding act of kindness to animals.

Deeds on behalf of dogs and cats have predominated in the winning column since the start of the award, in 1944, but the committee in charge of the project emphasizes that kindness to livestock and wild animals is just as acceptable in determining the winner.

Nominations should be sent to the American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill., and must be received not later than June 1, 1957.

The winner will be announced at the AVMA Annual convention in Cleveland, Ohio, in August. The award is a framed certificate describing the act of kindness and a \$100 U. S. Savings Bond.

Last year's winner was a 15-year-old Eagle Scout, whose four and one half year fight to save the rare Florida Key deer was climaxed by the establishment of a permanent government refuge for the animals. Among other winners in the past have been a high school student who advocated the use of maternity pens as a means of combating calfhood disease and calf injuries at birth, a boy who rescued a dog trapped in a 300-ft.-deep

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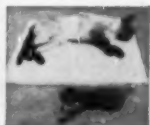


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NEW! radiant heated warming panel



This electrically operated radiant heat panel eliminates messy boxes and blankets, hot pads, etc., when keeping weanlings warm, treating patients in shock. Heavily Plasti-Plated to resist stains, urine, etc. Shock-proof. 2 convenient sizes, smallest costs only \$16.75. Uses 110 v. current. Write for folder N-R.

NEW! Copon kennel paint refinishes rusty kennels



This new special plastic paint was developed for refinishing metal kennels. Gives hard, baked-enamel-like surface without baking. Makes your old rusty kennels like new. Works wonders on wood and concrete too. Can be brushed, rolled, or sprayed. Choice of colors. Write for folder N-G.

NEW! durable, metal sheathed instrument/serum cases



Baked black enamel over steel with brass trim. 5 standard models; light weight yet built to take knocks! See folder N-1 for sizes, prices. Most are in stock, ready to ship.

NEW! clear plastic cases for your glass syringes



Keep syringes sterile, clean in these light unbreakable plastic cases. Covers for 5, 10 and 20 cc. syringes, \$5.75 set, folder N-4 gives details.

NEW! hi-current electric firing iron



Most modern, up-to-date way to fire horses, remove warty growths, ear polyps, tumors. Complete with 11 points/tips. Operates on 110 v. barn current. A superb instrument for horse practice. Write for folder N-S.

NEW! plastic sign letters for your office



Our new selection of beautiful weatherproof plastic signs will dress-up your office or clinic. All sizes, colors; easily installed. Write for folder N-5. We ship them ready to install with simple tools.

NEW! electric "B" dairy cow branding iron



Heats in 90 seconds, makes a clean brand, weighs only 11 ounces. T and V brands available too. Uses 110 v. current, won't smoke. Write for folder N-3.

NEW! do-it-yourself Plasti-Plated cages



Before you buy cages, write for folder N-2 on our amazing new Plasti-Plated kennels. Rock-hard, glass-smooth, seamless surfaces. Inexpensive, easy to do-it-yourself! We supply materials and complete instructions. Will furnish complete kennels if you prefer.

Please send me the folders I've checked below.

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ORGANIZATION SECTION

canyon, a boy who built a bumper device to protect a blind dog that had been his childhood pet, and a boy who rescued some valuable show horses from a burning barn.

The Trustees of the AVMA Group Insurance Trust report enthusiastic member acceptance of the program.

The date the insurance will be put into force will be announced in the next issue of the JOURNAL.

APPLICATIONS

Applicants—Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., the names of applicants residing within the jurisdictional limits of the constituent associations shall be published once in the JOURNAL.

The following applicants have been certified as members of the constituent association that has jurisdiction over the area in which the applicant resides. This certification was made by the secretary of the constituent association in accordance with Section 2, Article X, of the Administrative Bylaws.

DOUGLAS, CLYDE J.

12 Adams Ave., Rochester, N. H.
D.V.M., Michigan State University, 1955.

GROGAN, RALPH W.

5302 E. 11th, Tulsa 12, Okla.
D.V.M., Texas A. & M. College, 1953.

GUSTAFSON, NEIL C.

1126 N. Hastings, Hastings, Neb.
D.V.M., Kansas State College, 1944.

JENKINS, WILLIAM D.

5808 Old Richmond Rd., Bellaire, Texas.
D.V.M., Texas A. & M. College, 1943.

SILGAL, KARL R.

Box 353, La Center, Ky.
D.V.M., University of Latvia, Riga, 1941.

Applicants—Not Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., notice of all applications from applicants residing outside of the jurisdictional limits of the constituent associations, and members of the Armed Forces, shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full name, school and year of graduation, post office address, and the names of his endorers.

Second Listing

FORD, DOUGLAS T., Maple Cattle Breeders Association, Maple, Ont.

FOSTER, JAMES W., 1442—14th Ave., Fort Dodge, Iowa.

ROGERS, OWEN L., 217 Magruder, Mineral Wells, Texas.

WILKINSON, RICHARD H., c/o Ecole Nationale Veterinaire, D'Alfort-Seine, France.

Magazines Publish Articles on Veterinary Medicine

The following magazines have published articles on veterinary medicine since November, 1956. As a courtesy, the AVMA was permitted to preview the manuscripts and suggest changes; the acceptance of suggestions was at the discretion of the editors.

Changing Times, November, 1956

"Doctor for Your Dog and Cat," by Lois Felder, staff. What a veterinarian can do for pets, when it should be done, and a few tips on first aid for animals.

Circulation: 40,000 to a general audience.

Student A.M.A. Journal, November, 1956

"Members of the Team: Veterinarian," by Stelle Obert, staff. How veterinarians fit into the medical picture and what it takes to be a veterinarian.

Circulation: 33,240 to medical students.

Good Housekeeping, January, 1957

"Pets, Vets, and Vet Hospitals," by magazine staff. A shorter version of the "Changing Times" article with more emphasis on pet ills and how veterinarians treat them, less on what the profession, as a whole, does.

Circulation: 3,748,272.

Mademoiselle, January, 1957

"14 Professions: Veterinary Medicine," magazine staff. A college women's guide to careers in various professions, pointing out that veterinary training compares to that of a physician.

Circulation: 668,398 to young women.

New York Times Sunday Magazine, Jan. 20, 1957

"We Turn, Nervously, to Canine Neuroses," by Joanne Bourne. A well-researched summary of veterinary opinion on the value of tranquilizing drugs in canine medicine.

Circulation: 1,189,293 to a general audience.

Time, Jan. 21, 1957

Medicine Section, p. 60; Col. Harry Gorman's work on a prosthetic hip for dogs and how it is being applied in human medicine.

Circulation: 2,036,997 to a general audience.

Wall Street Journal, Feb. 5, 1957

"Barnyard Maladies," by Jim Large, Chicago commodity editor. A brief resumé of the cost of animal diseases and the value of the veterinarian to farmers.

Circulation: 265,000 to business men.

Health (an osteopathic publication), February, 1957

"Careers in Medicine: Veterinarian," by magazine staff. An excellent description of the veterinarian, his training, his work, and his worth.

Circulation: 33,000 to osteopathic physicians.



The magazines and one newspaper in which articles on veterinary medicine have appeared since November, 1956. They have a combined circulation of over 8,000,000. On the opposite page is information about titles and authors.

COMING MEETINGS

Washington, State College of. Annual conference for veterinarians. Pullman, Wash., April 8-10, 1957. Ray E. Watts, conference secretary.

Animal Disease Workers in the Southern States. Annual meeting. Louisiana State University, Baton Rouge, April 11-12, 1957. Leonard Reid Davis, U.S.D.A., Regional Animal Disease Research Laboratory, Auburn, Ala., secretary.

Northern Illinois Veterinary Medical Association. Semi-annual meeting. Faust Hotel, Rockford, April 17, 1957. James G. Hardenbergh, 121 Bridge St., Rockton, Ill., secretary.

North Central Iowa Veterinary Medical Association. Annual meeting. Warden Hotel, Fort Dodge, April 18, 1957. H. Engelbrecht, P. O. Box 797, Fort Dodge, Iowa, secretary.

American Animal Hospital Association. Annual meeting. Sheridan Palace Hotel, San Francisco, Calif., May 8-11, 1957. W. H. Riser, 5335 Touhy Ave., Skokie, Ill., secretary.

Kansas State College. Conference for veterinarians. School of Veterinary Medicine, Manhattan, May 26-28, 1957. E. E. Leasure, dean.

Texas A. & M. College. Conference for veterinarians. Texas A. & M. College, College Station, June 6-7, 1957. R. D. Turk, chairman.

North Dakota Veterinary Medical Association. Annual meeting. Minot, N. Dak., June 17-18, 1957. Dean Flagg, 202 Teton Ave., Bismarck, N. Dak., secretary.

Alberta Veterinary Medical Association. Annual convention. Lethbridge, Alta., June 21-22, 1957. H. C. Carlson, 9324 148th St., Edmonton, Alta., secretary.

North Carolina Veterinary Medical Association. Annual meeting. Grove Park, Asheville, June 25-27, 1957. C. J.

Lange, 3741 High Point Rd., Greensboro, N. Car., secretary.

Kentucky Veterinary Medical Association. Annual meeting. Brown Hotel, Louisville, July 15-16, 1957. Robert H. Singer, 136 Shawnee Place, Lexington, Ky.

Canadian Veterinary Medical Association. Annual meeting. Hotel Georgia, Vancouver, B. C., July 22-24, 1957. James Archibald, Ontario Veterinary College, Guelph, Ont., vice-president.

American Veterinary Medical Association. Annual meeting. Cleveland Auditorium, Cleveland, Ohio, Aug. 19-22, 1957. J. G. Hardenbergh, 600 S. Michigan Ave., Chicago 3, Ill., executive secretary.

New England Veterinary Medical Association. Annual meeting. Equinox House, Manchester, Vt., Oct. 6-9, 1957. C. Lawrence Blakely, 180 Longwood Ave., Boston, Mass., secretary.

Florida State Veterinary Medical Association. Annual meeting. Fort Harrison Hotel, Clearwater, Oct. 13-15, 1957. Robert P. Knowles, 2934 N.W. 17th Ave., Miami 37, Fla., secretary.

Southern Veterinary Medical Association. Annual meeting. Hotel Roanoke, Roanoke, Va., Oct. 27-30, 1957. A. A. Husman, P. O. Box 91, Raleigh, N. Car., secretary.



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Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Association, the first Thursday of each month. B. M. Lauderdale, Montgomery, secretary.

Jefferson County Veterinary Medical Association, the second Thursday of each month. S. A. Price, 213 N. 15th St., Birmingham, secretary.

Mobile-Baldwin Veterinary Medical Association, the first Tuesday of each month. W. David Gross, 771 Holcombe Ave., Mobile, Ala., secretary.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. Keith T. Maddy, Phoenix, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. E. T. Anderson, Rt. 2, Box 697, Tucson, Ariz., secretary.

CALIFORNIA—Alameda Contra Costa Veterinary Medical Association, last Wednesday of each month. Leo Goldson, 3793 Broadway, Oakland 11, Calif., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of each month. E. Paul, Redwood City, Calif., secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. R. B. Barsaleau, 2333 E. Mineral King, Visalia, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of each month. A. L. Irwin, 301 Taft Highway, Bakersfield, Calif., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. W. H. Rockey, P. O. Box 121, San Luis Obispo, Calif., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 90 Corral de Tierra, Salinas, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Co-

vell, in Modesto, Calif. Lyle A. Baker, Turlock, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. Chester A. Maeda, 766 E. Highland Ave., San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, the third Thursday of each month. Donald E. Lind, 2643 N. Main St., Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. T. D. Harris, San Mateo, Calif., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. Robert E. Clark, Napa, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. W. E. Steinmetz, 4227 Freeport Blvd., Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. H. R. Rossoll, 1795 Moore St., San Diego, Calif., secretary.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, secretary.

Santa Clara Valley Veterinary Association, the fourth Tuesday of each month. Kay Beulley, N. Fourth and Gish Rd., San Jose, Calif., secretary.

Southern California Veterinary Medical Association, the last Wednesday of each month. Don Mahan, 1919 Wilshire Blvd., Los Angeles 37, Calif., executive secretary.

Tulare County Veterinarians, the second Thursday of each month. R. B. Barsaleau, 2333 E. Mineral King, Visalia, Calif., secretary.

COLORADO—Denver Area Veterinary Society, the fourth Tuesday of every month. Richard C. Tolley, 5060 S. Broadway St., Englewood, Colo., secretary.

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Northern Colorado Veterinary Medical Society, the first Monday of each month. M. A. Hammarlund, School of Veterinary Medicine, Colorado A. & M. College, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. E. J. Hathaway, Clifton Park Manor, Apt. 73-5, Wilmington 2, Del., secretary.

FLORIDA—Central Florida Veterinary Medical Association, the first Tuesday of each month, time and place specified monthly. Jack H. McElyer, 5925 Edgewater Drive, Orlando, Fla., secretary.

Jacksonville Veterinary Medical Association, the second Thursday of each month, time and place specified monthly. George F. Yopp, 4644 Main St., Jacksonville, Fla., secretary.

Northwest Florida Veterinary Medical Society, third Wednesday of each month, time and place specified monthly. Harold A. Tennant, Atmore, Ala., secretary.

Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St., West Palm Beach. Ross E. Evans, 5215 S. Dixie Highway, West Palm Beach, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. Paul J. Myers, Winter Haven, Fla., secretary.

South Florida Veterinary Society, the third Tuesday of each month, at the Seven Seas Restaurant, Miami, Fla. E. D. Stoddard, 6432 S. W. 8th St., Miami, Fla., secretary.

Suwannee Valley Veterinary Association, the third Friday of each month, at the Thomas Hotel, Gainesville, Fla. R. C. Mann, Rt. 1, Box 37, Ocala, Fla., secretary.

Volusia County Veterinary Medical Association, the fourth Thursday of each month. A. E. Hixon, 131 Mary St., Daytona Beach, Fla., secretary.

GEORGIA—Atlanta Veterinary Society, the second Tues-

day of every month at the Elks Home on Peachtree St., Atlanta, Ga. J. L. Christopher, Smyrna, Ga., secretary.

ILLINOIS—Chicago Veterinary Medical Association, the second Tuesday of each month. Mark E. Davenport, Jr., 215 S. Edgewood Ave., LaGrange, Ill., secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. H. S. Bryan, College of Veterinary Medicine, University of Illinois, Urbana, secretary.

INDIANA—Central Indiana Veterinary Medical Association, the second Wednesday of each month. Peter Johnson, Jr., 4410 N. Keystone Ave., Indianapolis 5, secretary.

Michiana Veterinary Medical Association, the second Thursday of every month except July and December, at the Hotel LaSalle, South Bend, Ind. J. M. Carter, 3421 S. Main St., Elkhart, Ind., secretary.

Tenth District Veterinary Medical Association, the third Thursday of each month. J. S. Baker, P. O. Box 52, Pendleton, Ind., secretary.

IOWA—Cedar Valley Veterinary Association, the second Monday of each month, except January, July, August, and October, at Black's Tea Room, Waterloo, Iowa. H. V. Henderson, Reinbeck, Iowa, secretary.

Coon Valley Veterinary Association, the second Wednesday of each month, September through May, at the Bradford Hotel, Storm Lake, Iowa. D. I. Lee, Sac City, Iowa, secretary.

Fayette County Veterinary Association, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Wisneslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

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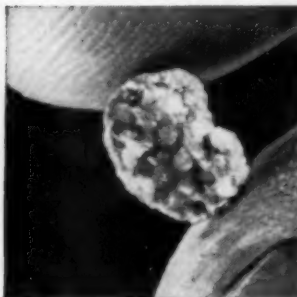
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Specially shaped to absorb liquid almost instantly. Each nourishing, golden brown kernel of Quick Ken-L-Meal has an irregularly shaped surface—acts like a sponge to soak up liquid in a jiffy.



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No messy leftovers to clean up. Quick Ken-L-Meal stays crumbly-moist... won't stick to the dish or your dog's mouth. Tastes so good even a finicky eater will go to the bottom of the bowl.



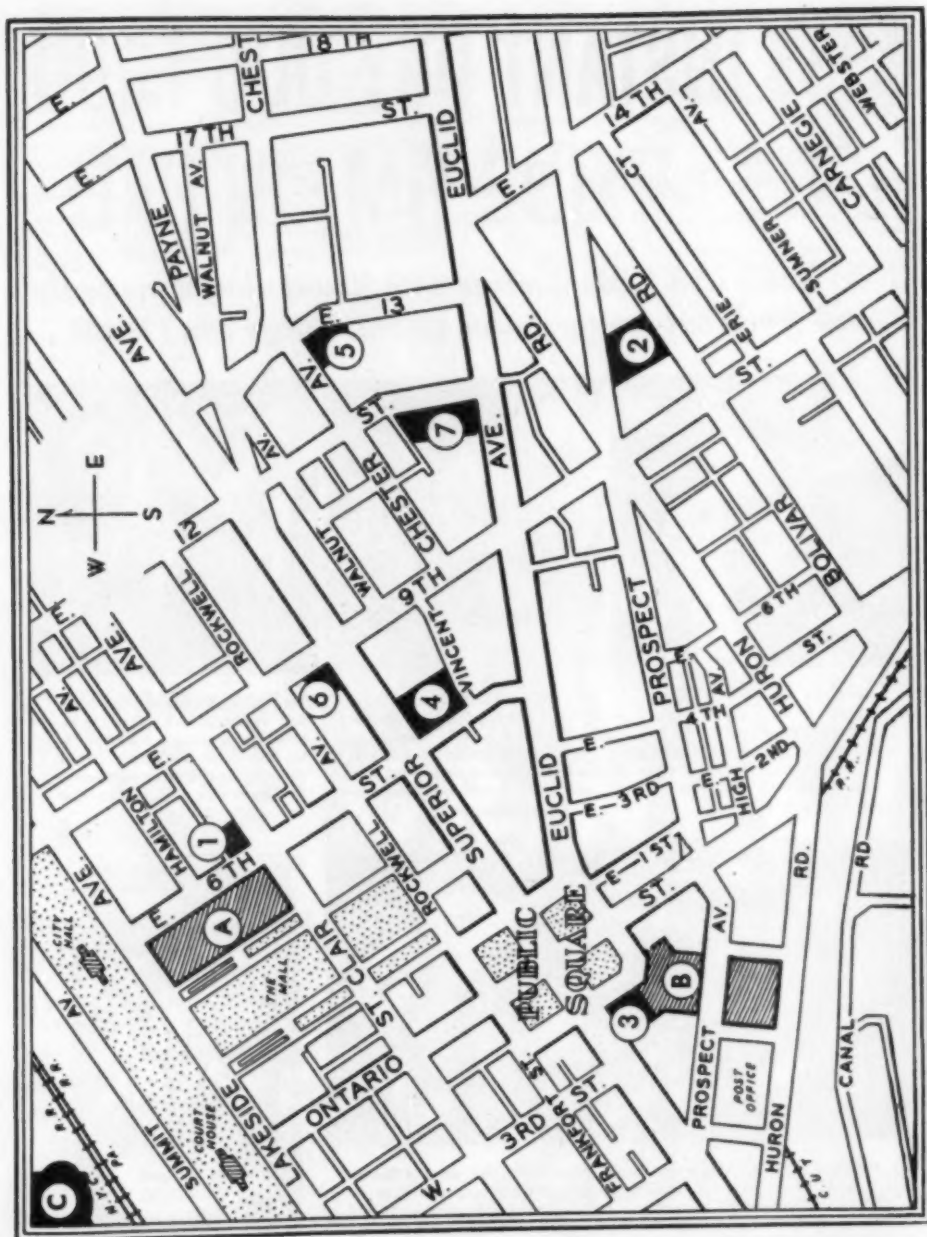
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 2. Carter Hotel
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 6. Olmsted Hotel
 7. Statler Hotel

HOTEL RESERVATIONS — CLEVELAND CONVENTION

Ninety-Fourth Annual AVMA Meeting, Aug. 19-22, 1957

All requests for hotel accommodations will be handled by a Housing Bureau in cooperation with the Committee on Local Arrangements. The Bureau will clear all requests and confirm reservations.

Hotels and Rate Schedule

Hotel	Single	Double	Twin	Suite
1. Auditorium	\$4.75- 8.00	\$ 7.50-10.00	\$10.00-12.00	\$25.00
2. Carter	\$5.50- 9.25	\$ 8.50-13.50	\$ 9.50-14.25	\$26.50-36.50* \$40.00-48.25†
3. Cleveland	\$6.50-11.00	\$ 9.00-14.00	\$10.50-20.00	\$20.00-55.00* \$44.00-70.00†
4. Hollenden	\$5.00- 9.00	\$ 8.00-12.00	\$ 9.00-14.00	\$20.00-30.00* \$30.00-60.00†
5. Manger	\$5.00- 9.00	\$ 7.00- 9.00	\$ 9.00-13.00	\$18.00-45.00* \$36.00-75.00†
6. Olmsted	\$4.25- 9.00	\$ 7.00-11.00	\$ 8.50-11.00	\$17.00-20.00
7. Statler	\$6.00-13.00	\$10.00-16.00	\$11.00-18.50	\$24.00-32.00* \$46.50-48.50†

*—2-room suite

†—3-room suite

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RESERVATION FORM — AVMA CONVENTION — CLEVELAND

To: HOUSING BUREAU, Cleveland Convention and Visitors Bureau, Inc., 511 Terminal Tower, Cleveland 13, Ohio.

Hotel	Accommodations
(Three choices MUST be shown)	_____Single Room(s) @ \$_____
First choice hotel _____	_____Double Room(s) @ \$_____
Second choice hotel _____	_____Twin-bed Room(s) @ \$_____
Third choice hotel _____	_____2-room suite @ \$_____
	_____3-room suite @ \$_____

Arriving on (date) _____ at _____ () a.m.

() p.m.

Departing on (date) _____

Will be occupied by (attach list of additional names if necessary).

Your Name (print or type) _____

Street Address _____

City _____ Zone _____ State or Province _____

KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. L. S. Shirrell, Versailles Rd., Frankfort, secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month in Louisville or within a radius of 50 miles. W. E. Brewley, P.O. Box "H," Crestwood, secretary.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m. at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Harry L. Schultz, Jr., 9011 Harford Rd., Baltimore, Md., secretary.

MICHIGAN—Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert E. Kader, 5034 Armstrong Rd., Lansing 17, Mich., secretary.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. S. Correll, Rt. 1, Midland, Mich., secretary.

Southeastern Veterinary Medical Association, the fourth Wednesday of every month, September through May. Gilbert Meyer, 14003 E. Seven Mile Rd., Detroit 5, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of the month (except July and August) at the Sheraton Motel, Spring Ave. and Lindell Blvd. Allen B. Shopmaker, 136 N. Meramec, Clayton 5, Mo., secretary.

Kansas City Small Animal Hospital Association, the first Monday of each month, at alternating hospitals. W. F. Noland, 7504 Metcalf, Overland Park, Kan., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month at Exchange Hall, ninth floor, Livestock Exchange Bldg., 1600 Genessee St., Kansas City, Mo. Busch Meredith, 800 Woodswether Rd., Kansas City 5, Mo., secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Hightstown, N. J. David C. Tudor, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April at the Academy of Medicine, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Milburn Ave., Maplewood, N. J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Casa Maia in Teaneck. James R. Tanzola, Upper Saddle River, secretary.

Northwest Jersey Veterinary Society, the third Wednesday of every odd month. F. B. Duke, 49 Taylor St., High Bridge, N. J., secretary.

Southern New Jersey Veterinary Medical Association, the third Tuesday of each month at the Collingswood Veterinary Hospital, Collingswood. W. E. Snyder, E. Kings Highway and Munn Ave., Haddonfield, secretary.

NEW YORK—New York City, Inc., Veterinary Medical Association of the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel, Greensboro. Joseph A. Lombardo, 411 Woodlawn Ave., Greensboro, secretary.

Eastern North Carolina Veterinary Medical Association, the first Friday of each month. Wm. Allen Potts, 401 W. James St., Mount Olive, secretary.

Piedmont Veterinary Medical Association, the last Friday of each month. John G. Martin, Boone, N. Car., secretary.

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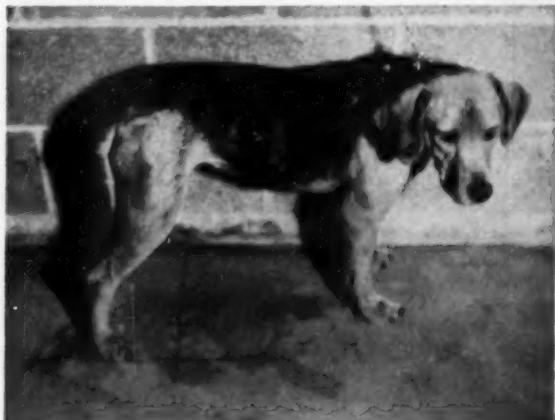
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DRAMATIC IMPROVEMENT IN JUST 19 DAYS...



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AFTER SELEEN—Marked improvement shows in elimination of mange mites and lesions, clearing of affected areas, regrowth of haircoat. Photo taken 19 days and three SELEEN treatments after first picture.

And you can get equally fast control of nonspecific dermatoses and ectoparasitic skin conditions in dogs and cats the same way—by treating these pets

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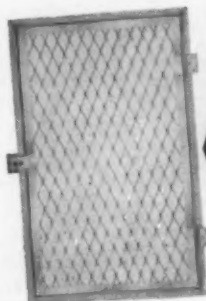
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- relieves itching and scratching, usually with the first treatment.
- cleanses skin and haircoat, removes tissue debris.
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OHIO—Cuyahoga County Veterinary Medical Association, the first Wednesday of each month, September through May (except January), at 9:00 p.m. at the Carver Hotel, Cleveland, Ohio. Ed. R. Jacobs, 5522 Pearl Rd., Cleveland, Ohio, secretary.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month. James M. Brown, 2818 W. Britton Rd., Oklahoma City, secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Don L. Hohmann, 538 S. Madison St., Tulsa, Okla., secretary.

PENNSYLVANIA—Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine, 39th and Woodland Ave., Philadelphia 4, Pa. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. J. Marvin Prewitt, 4141 Lexington Blvd., Corpus Christi, Texas, secretary.

VIRGINIA—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 312 W. Cary St., Richmond 20, Va., secretary.

Northern Virginia Veterinary Society, the second Wednesday of every third month. Meeting place announced by letter. H. C. Newman, Box 145, Merrifield, secretary.

Southwest Virginia Veterinary Medical Association, the first Thursday of each month. I. D. Wilson, Blacksburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Monday of each month, Magnolia American Legion Hall, 2870 32nd W., Seattle, Wash. William S. Green, 9637 S. E. 36th, Mercer Island, Wash., secretary. South Puget Sound Veterinary Association, the second Thursday of each month except July and August. O. L. Bailey, P. O. Box 906, Olympia, Wash., secretary.

WEST VIRGINIA—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 290 5th St., W. Huntington, W. Va., secretary.

WISCONSIN—Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. George F. Lynch, 201 West Devon St., Milwaukee 17, Wis., secretary.

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Single Bottle \$2.00
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Assistant wanted in busy, small animal hospital in large eastern city. Want a man who is interested in working 2 to 3 years and eventually leasing or buying hospital and practice. Will consider June graduate; wonderful opportunity for capable man who is not averse to work. Address "Box E 30," c/o JOURNAL of the AVMA.

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NEW JERSEY



This radiograph was made with Par Speed screens at 80 kv.p., 10 ma., exposure $\frac{1}{4}$ second. Note that it has been slightly blurred by movement of the animal.



This radiograph was made with Du Pont "Patterson" Lightning Special screens, also at 80 kv.p., 10 ma., but exposure time was only $\frac{1}{8}$ second, just half the time! Shorter exposure required reduces danger of movement spoiling the shot, without sacrificing density or detail.

Good x-rays in only half the time... with Du Pont "Patterson" Lightning Special Screens!

The two radiographs above were made in a routine x-ray check of a fractured sesamoid bone in the right front foot of a horse. One was made with Par Speed intensifying screens and the other with Du Pont "Patterson" Lightning Special screens. At 80 kv.p., 10 ma., using a portable x-ray unit, an exposure of $\frac{1}{4}$ second was needed to produce a good radiograph with the Par Speed screens. The exposure made with the Lightning Special screens was only $\frac{1}{8}$ second — just half as long — and produced a radiograph comparable in every way with the first, at exactly the same kilovoltage and milliamperage.

The advantage is obvious. When x-raying animals, which are likely to move at any time and spoil the shot, the shorter the exposure time, the better. And you can't do better than to use Du Pont "Patterson" Lightning Special screens.

In the darkroom, Du Pont processing chemicals will give you consistently good results. Our booklet, "Darkroom Technique," is another processing aid you'll find useful. Just mail the coupon and we'll gladly send you a copy.

DU PONT X-RAY PRODUCTS FILM • "PATTERSON" SCREENS • CHEMICALS



Better things for better living
... through chemistry

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• Du Pont 2420-2 Nemours Bldg. JAV-4

• Wilmington 98, Delaware

• Please send booklet, "Darkroom Technique," to:

• Name _____

• Address _____

• City _____ State _____

•

Skin Adherent No. 2

**Non-irritating liquid adhesive
for strapping and padding**

**Small Animal Hospitals
Send for Sample**

The MOWBRAY CO., Waverly, Iowa

Wanted—Positions

Pennsylvania graduate, 1947, seeks responsible position in small animal practice; 4 years of experience, married, sober, veteran, available June, 1957. Can handle management, excellent references. Give full particulars first letter. Address "Box G 6," c/o JOURNAL of the AVMA.

Graduate, 1955, 26, married, desires position leading to partnership in Middlewest mixed practice; licensed in Iowa. Being discharged from service, August, 1957. Address "Box G 15," c/o JOURNAL of the AVMA.

Wanted—Practices

Experienced general practitioner wishes to purchase a mixed practice in the East capable of supporting 2 veterinarians. Address "Box E 41," c/o JOURNAL of the AVMA.

Experienced small animal practitioner wishes to purchase or lease with option a small animal practice. Licensed in New York, New Jersey, and Michigan. Address "Box E 42," c/o JOURNAL of the AVMA.

To insure prompt delivery, replies should be carefully addressed: Complete box number as given in the ad, AVMA, 600 S. Michigan Blvd., Chicago 5, Ill.

Established small animal practice wanted with good growth potential; will consider anywhere. Licensed Michigan, Indiana, Kansas, Arizona, and California. Presently in service. Substantial down payment. Address "Box G 8," c/o JOURNAL of the AVMA.

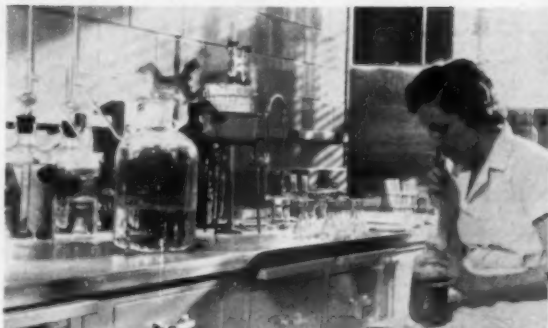
Graduate OSU, 1955, married, draft exempt, would like to purchase, or lease with option, a small animal hospital in southern California or Ohio. Address "Box G 10," c/o JOURNAL of the AVMA.

For Sale or Lease—Practices

Small animal hospital for sale; well-established, excellent location, Piedmont, N.C.; 35 kennels and outside runs. Gross, \$20,000; price, \$13,500, includes hospital, large lot, drugs, and equipment. Will finance \$7,500. Address "Box E 11," c/o JOURNAL of the AVMA.

Established mixed practice for sale in Florida; hospital, kennels, separate home, 15 acres. Details on request. Address "Box G 3," c/o JOURNAL of the AVMA.

Schering Opens New Laboratories



The new Schering veterinary medical laboratories at Bloomfield, N.J., were opened January 24. The estimated cost of the building is over \$1,500,000.

Wisconsin dairy practice for sale; real estate, drugs, and instruments. Address "Box G 7," c/o JOURNAL of the AVMA.

Three-bedroom home on 10 acres for sale with modern combination hospital grossing \$10,000 annually. Outside runs, lounge, office, medicine room, surgery-examining room, built-in cages, extra room, box stall, large animal operating room with commercial squeeze chute. An ideal unit; \$30,000. Address "Box G 9," c/o JOURNAL of the AVMA.

Called into Air Force in June; will lease newly constructed small animal hospital in rapidly growing area of Denver, Colo. Address "Box G 12," c/o JOURNAL of the AVMA.

Only veterinarian in county seat town of 1,300, southeast South Dakota. Pig vaccinations per year, 27,000 to 30,000. Will sell for \$15,000 cash; please do not inquire unless funds are sufficient. Address "Box G 13," c/o JOURNAL of the AVMA.

Large animal practice in southern Indiana for sale or lease; gross \$25,000. Office building, 2-way radio equipment included, \$10,000. Address "Box G 16," c/o JOURNAL of the AVMA.

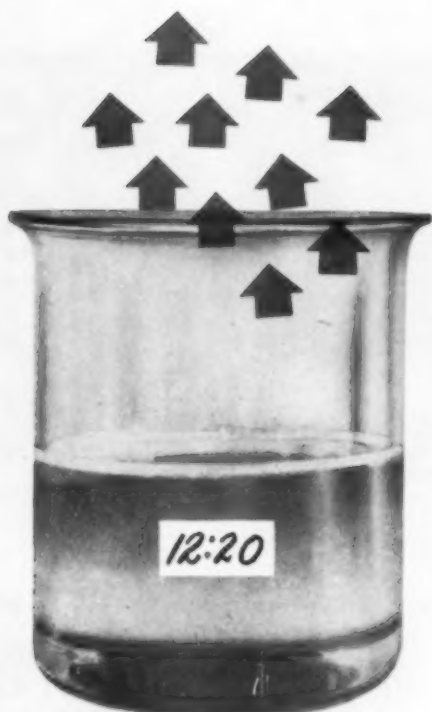
Remittance must accompany advertisement

Long-established, lucrative, general practice for sale in medium-sized city, Great Lakes region. Modern 35-cage hospital and lovely new brick home. Priced at value of real estate; \$20,000 to handle. Requires 2 doctors to operate. Reason for selling, health. Address "Box G 17," c/o JOURNAL of the AVMA.

Journal Wanted

To complete my volume for binding, I need the JOURNAL of the AVMA, September, 1948, vol. cxiii, No. 858. Please write to Dr. Marlowe H. Jones, 3322 S. Union Ave., Tacoma 3, Wash.

new!



now quicker relief of
frothy bloat with effective
BLO-TROL*

BRAND OF ACETBUTYLATE

BREAKS THE FROTHY MASS . . . releases gases entrapped in froth in three to six minutes . . . prompt deflation in 15-30 minutes through normal eructation . . . or if necessary, obtain faster relief through trocharization or stomach tube, even in frothy bloat.

Sold to veterinarians only. Available in: 150 cc., multi-dose vials, each cc. contains 1 Gm. of acetbutylate.

Dosage—Cattle: intrarumenally or orally, 20-30 cc. Sheep and goats: 5-10 cc. Dose may be repeated in one hour, if necessary.

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Pfizer

Department of Veterinary Medicine, PFIZER LABORATORIES, Division, Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y.

IN MASTITIS

CHECK inflammation promptly

ERADICATE infection

REDUCE secretory tissue damage

METIBIOTIC

mastitis infusion VETERINARY



bridge the therapeutic gap in mastitis by
reducing inflammation.

In METIBIOTIC the more potent antiinflammatory properties of METICORTEN complement the wide antibacterial spectrum of **penicillin-dihydrostreptomycin**, which are bactericidal to the majority of mastitis organisms.

This combined action results in prompt penetration of the clogged ducts and high, sustained antibiotic levels. Recovery is rapid, usually following a single infusion, and milk production returns to normal generally within 24 to 36 hours.

packaging:

METIBIOTIC Mastitis Infusion Veterinary, 7.5 cc. tube,
boxes of 12, 72, 144.

Schering

SCHERING CORPORATION, BLOOMFIELD, NEW JERSEY

METICORTEN,* brand of prednisone.

METIBIOTIC,* brand of procaine penicillin-dihydrostreptomycin in oil with prednisone acetate.

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the ideal
mastitis preparation
should include
these factors:

It should have a wide therapeutic index and be effective in reducing inflammation and eradicating infection, should be nonirritating and easy to administer.

The economy of one-dose treatment also is important in veterinary medicine where the cost in time spent and the patient's lowered milk production are of vital importance.

...the most complete antiinflammatory-antibiotic compound, fulfills these criteria in the treatment of acute and chronic mastitis.



AN
EXCELLENT
DISPENSING
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**Sold only to
graduate
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**to provide products of the finest
quality and greatest effectiveness
for the highest degree of
successful veterinary practice**



The wise farmer depends on the veterinarian to maintain livestock health and profits.

The great research skills and facilities of the American Cyanamid Company are as devoted and persistent in their efforts in behalf of ever more and better products for the veterinary profession as they are in the field of human medicine.

And in the production of the Veterinary Professional Line, including the POLYOTIC® Tetracycline products, Cyanamid standards of quality and effectiveness are no less stringent and exacting than those established for products for human use.

The same strict quality control is scrupulously maintained. Even packaging requirements are equal in every way.

For it is our unswerving purpose to place in the hands of veterinarians an ever-increasing number of products of unexcelled quality and proven effectiveness to help them achieve and maintain the greatest measure of success in practice.


These fine products are sold only to veterinarians.

For detailed information write to the VETERINARY PROFESSIONAL SERVICE DEPARTMENT, AMERICAN CYANAMID COMPANY, NEW YORK 20, N. Y.

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STERANE®
BRAND OF PREDNISOLONE
for adjustment to the

STRESS
which is a factor in

DYSTOCIA


Printing

Gummed labels on roll printed to order; handy dispenser. Quantity buying cheaper—store safely through polyethylene protection. Money back guarantee. Postcard brings samples. Boyd's Printery, Box 462B, Genoa, Ohio.

Miscellaneous

Breedersleve—the disposable obstetrical sleeve. Package of 25 with detachable chest band, \$5.00; lower wholesale prices. Free sample upon request. Breeders Equipment Co., Flourtown, Pa.

For sale—motorola radio base and mobile units, 15 watts, 15-mile radius, 4 years old, 12 volts, frequency 47.54. Do not need: \$1,000. Address "Box G 14," c/o JOURNAL of the AVMA.

Artificial Udder—Beco Litter Feeder—nurses 8 puppies simultaneously. Stays warm; easily cleaned and sterilized. Complete unit, \$15; guaranteed. Breeders Equipment Co., Flourtown, Pa.

A school for cowboys, believed to be the first of its kind in the Middle East, was opened in Tabgha, Israel, in September, 1956, with a veteran Texas cowpuncher as manager. Fifteen men and one woman recently completed the first six-week course. —Refuah Vet., Sept., 1956.

PREVENT . . . CONTROL

Digestive Stasis with

MAGDAD Stronger

BROAD BASE OF USEFULNESS — as an efficient antacid, carminative, demulcent, rumenatoric, laxative and purgative. MAGDAD Stronger may be used safely in domestic animals — large or small.

MORE EFFECTIVE THROUGH SYNERGETIC ACTIVITY — of Magnesium Oxide, 1-8 Dihydroxyanthraquinone and Diacetyldihydroxyphenylisatin — non-toxic, non-irritating digestive tract stimulants — together with Sodium Lauryl Sulfate — a wetting agent which reduces surface and interfacial tension between liquids, gases and solids.

EASY TO USE — **MAGDAD Stronger**, the free flowing, wettable powder may be given with feed, as a drench, with stomach tube or may be injected through the rumen wall.

Available in 240 gram jars or 25 pound drums

Sales to Graduate Veterinarians Only



LABORATORIES
NEW CASTLE, INDIANA, U. S. A.



Effective treatment of
TAPEWORM INFESTATION

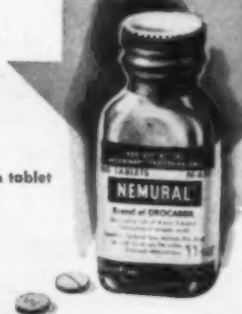
- Vermifugal and purgative in action, NEMURAL is particularly effective in dogs and adult cats. Moreover, it acts quickly.
- May be administered without a preliminary starvation. Administration usually not followed by emesis.
- Definite dosage: One 18 mg. tablet for each 8 lb. of body weight.

Supplied in tablets of 18 mg., bottles of 100 and 500. (Each tablet contains 3.13 mg. arsenic.)

Winthrop
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NEW YORK 18, N. Y.

Nemural (brand of drocarbll), trademark
reg. U.S. Pat. Off.

*Literature
and detailed
information
supplied on request.*



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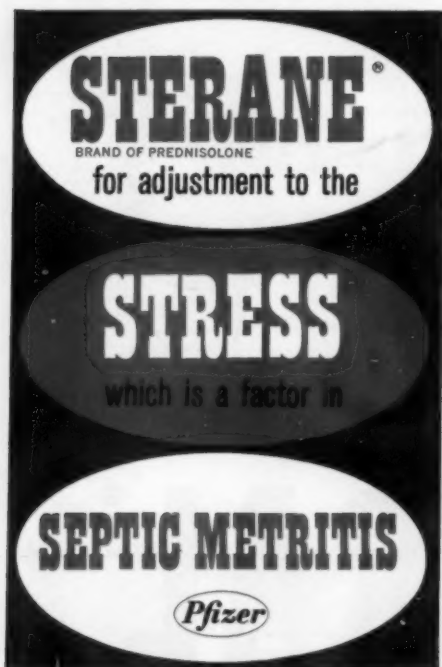


HISTACOUNT
For Doctors...
Printing and Patients Records
PROFESSIONAL PRINTING CO., INC.
NEW HYDE PARK, N. Y.

Hydrocortisone Ointments and Lotions Retain Prescription Status

The Food and Drug Administration announced on Jan. 17, 1957, that available evidence fails to show that hydrocortisone and hydrocortisone-acetate ointments and lotions are safe for use in self-medication, which would permit these items to be declared exempt from prescription dispensing requirements.

The Expensive Woodchuck.—The woodchuck (*Arctomys monax*), also known as the ground hog and marmot, not only burrows holes in the field but 6 of them will eat as much forage as will a cow. Found in all sections of the country, it is the laziest of all animals, browsing early in the forenoon and late in the afternoon. Of its natural enemies, the bear, wolf, lynx, bobcat, and mountain lion have been greatly reduced, leaving only the fox and man to keep its numbers down.—*Am. Cattle Producers.*



STERANE
BRAND OF PREDNISOLONE
for adjustment to the

STRESS
which is a factor in

SEPTIC METRITIS
Pfizer

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C

hog cholera



e

erysipelas

R_L products
are sold only
to Graduate
Veterinarians



R_L Hog Cholera Vaccine

A modified live-virus, vacuum dried, porcine origin. When used with serum, confers early, safe immunity.

Erysin

Concentrated, formalin inactivated aluminum hydroxide, absorbed Erysipelothrix Rhysioopathiac organisms and their soluble antigens. These organisms have been specially selected and tested for their antigenicity.

These two products offer safety, efficiency and reliability in the prevention of Hog Cholera and Swine Erysipelas.

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Research Laboratories, Inc.

Saint Joseph, Missouri



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**CHICK EMBRYO
ORIGIN**

Modified Live Virus Rabies Vaccine prepared from the Flury strain of rabies virus, modified in virulence by passage in chick embryos.

This modified strain has demonstrated high immunizing ability in extensive field trials.

For use only in the immunization of healthy dogs against rabies.

**OVINE
ORIGIN**

A sterile, neutral, phenolized 20% suspension prepared from the brain and spinal cord of animals showing typical symptoms of rabies following subdural injection of the fixed virus of rabies.

For the immunization of dogs and other animals against rabies.

YOU MAKE THE CHOICE!

Lockhart now offers both vaccines for your consideration . . .
you make the choice!



DIVISION OF
HAYER / LOCKHART LABORATORIES
KANSAS CITY, MISSOURI

Sales to graduate veterinarians only.

The advertisement features a series of balloons of various shapes and sizes, some black and some white, floating against a dark grey background. The balloons are connected by thin black lines. The text on the balloons is as follows:

EMBLO

STOPS

**Digestive
Dysfunctions**

**and
FROTHY
BLOAT**

anti-ferment

anti-acid

**mild
laxative**

Emblo works quickly and safely to stop digestive dysfunctions and frothy bloat resulting from going on full feed too rapidly or overeating silage, concentrates, etc. Emblo contains milk of magnesia plus therapeutic amounts of polymerized methyl silicone and disodium phosphate.

Supplied in powder or Taboles® that fit a 1-oz. balling gun, Emblo is easy to administer and makes a good dispensing item. Order from your Haver/Lockhart supplier now.

Emblo Powder
12 oz. makes 1 gal.

Emblo Taboles®
50 1-oz., creased

Milk of magnesia fortified with
disodium phosphate and silicone.



HAVER-GLOVER
division of

HAVER / LOCKHART LABORATORIES

Kansas City, Missouri

What?

*an
oral
iodide
that
animals
like
to
eat?*

new Jen-Sal

PALADIDE

trade mark

Animals like to eat Paladide . . . day after day. Here's why. Unlike other iodides you've used, Jen-Sal's exclusive* new product is insoluble in saliva but wholly soluble and biologically available² in intestinal fluids.

Paladide supplies more than 16 gr. available iodine per oz. of convenient, easy-to-mix base. The active agent is bound closely to large particles, thus insuring uniformity of dosage. Furthermore, the unique stability of Paladide avoids the liberation of free iodine in stock packages³. The odor stays pleasant, and you are assured of full therapeutic value even after the package is opened.

Safe? Paladide's active agent is fully approved for human consumption. Carefully controlled animal tests for toxicity as well as therapeutic blood and tissue levels assure a safe, yet highly effective agent for iodine therapy³.

Available now in 1 lb. jars or economical 25 lb. pails with special measuring scoop.

^{*}U.S. Patent No. 2,772,167

¹J. of Nutrition, 53:1, May, 1954.

²Armour Research Foundation Report Project No. C616.

³Jensen-Salsbery Research Data: In press.

**Jensen-Salsbery
Laboratories, Inc.**
Kansas City, Missouri

Jen-Sal

